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EIGHTY-FIFTH YEAR OF PUBLICATION

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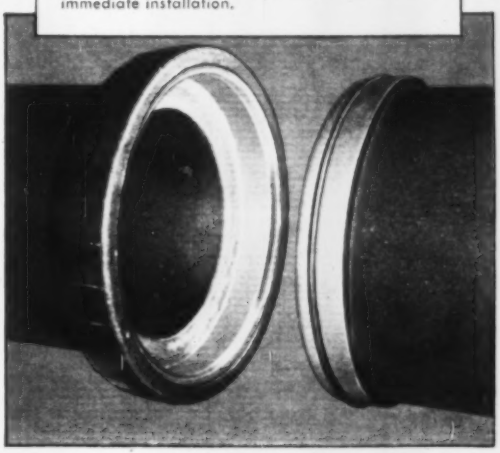

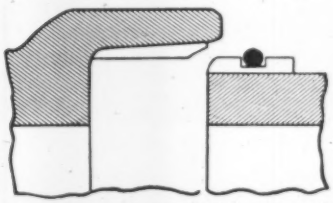

Fig. 1, Universal "**Uniflex**" Vitrified Clay Pipe before coupling.

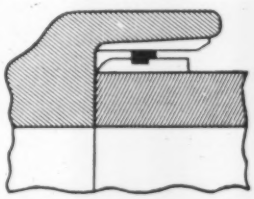

Fig. 2, As pipe is coupled, "**Uniflex**" compacts to form a water-tight seal on four sides of the Gasket.

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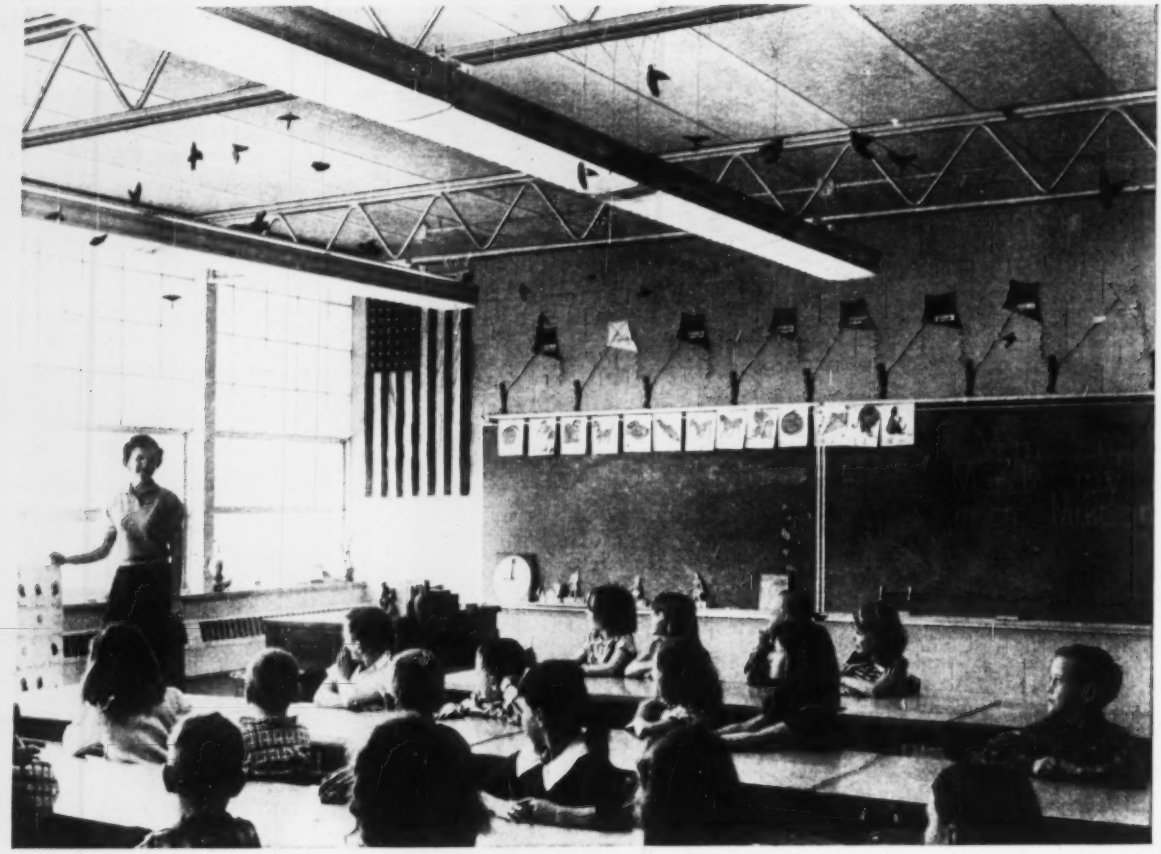

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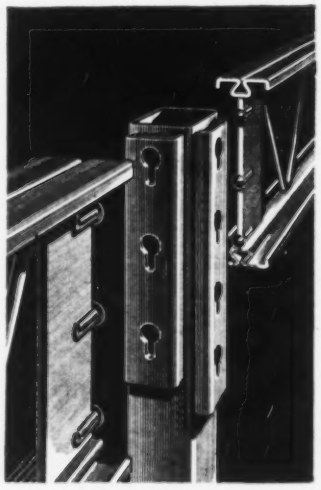

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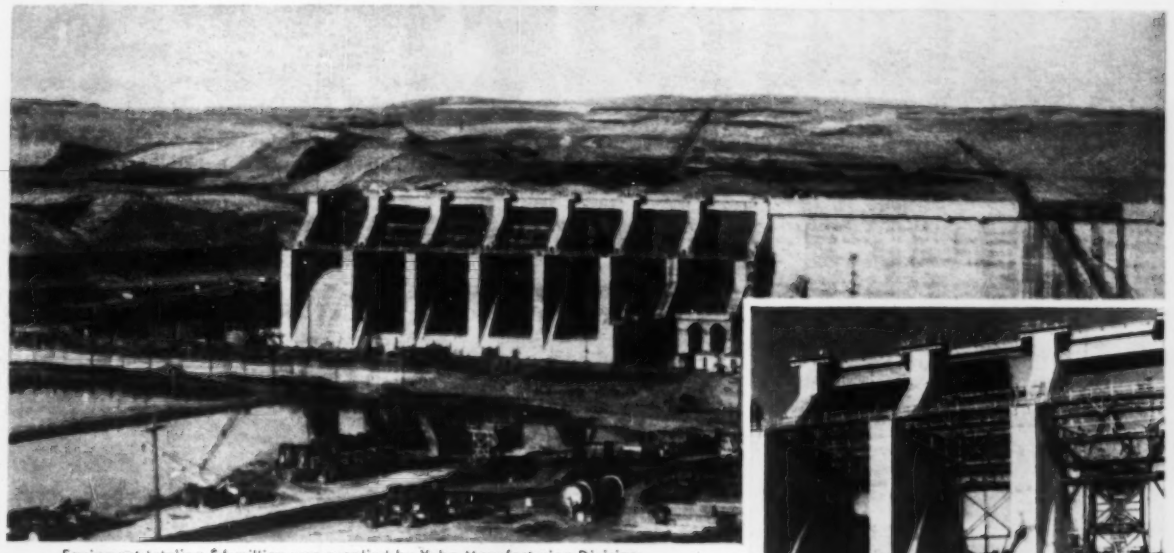
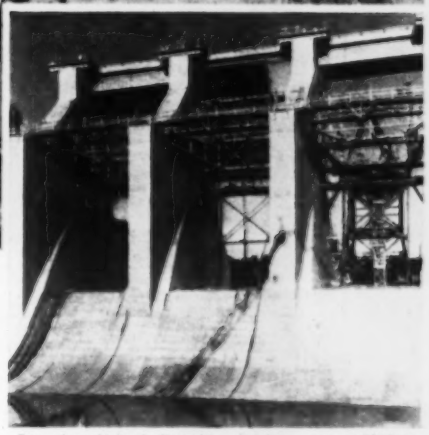


Equipment totaling $4 million was supplied by Yuba Manufacturing Division for the huge Ice Harbor Dam project on the Snake River, Washington.



Ten giant Yuba-built spillway tainter gates, 50 feet wide and five stories high, weigh 145 tons each.

From Forebay to Tailrace
Design · Fabrication · Erection

The giant radial gates shown here, the massive trash racks, the draft tube, traverse and intake bulkheads, and a number of other steel fabricated components totaling 44 in all, were produced by Yuba Manufacturing Division.

This enormous project of the Army Engineers is typical of the many dam construction jobs in which Yuba has been a major participant. The reasons: decades of experience in this specialized field; real know-how of its skilled personnel; large, fully-equipped production facilities—East and West.

Where user and contractor want relief from coordinating production, delivery and installation, they can call on Yuba to handle the complete job as a package responsibility—from forebay to tailrace—through design, fabrication, erection.

Ask for Bulletin No. HY-51, describing Yuba's hydroelectric equipment and services, or ask for a sales engineer to call.

Each radial gate was assembled at the plant, match marked, then disassembled and shipped on gondola cars to the site—four cars to a gate!

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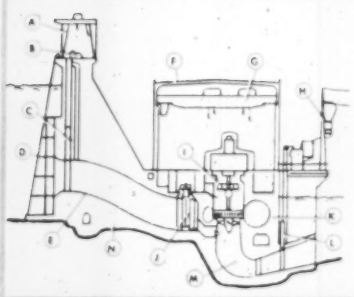

- A GANTRY CRANES
- B HOISTS
- C INTAKE GATES
- D TRASHRACKS & TRASH RAKES
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- G BRIDGE CRANES
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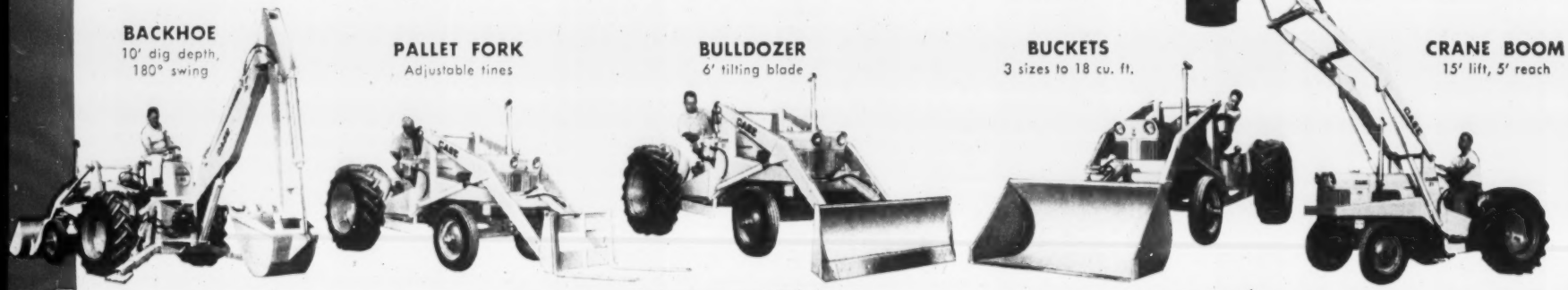

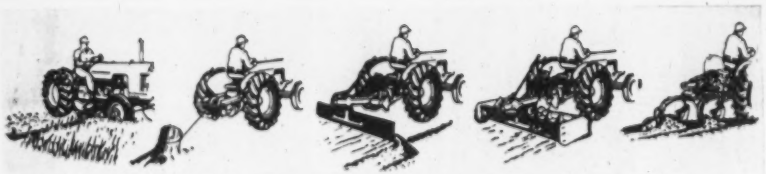

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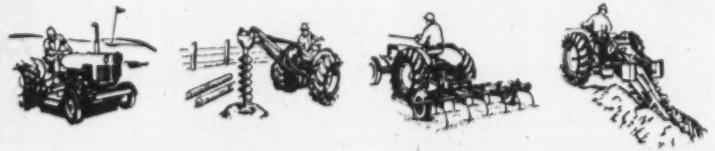

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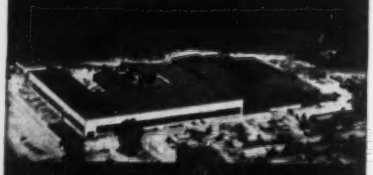

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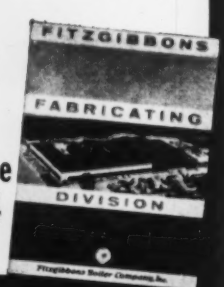

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Reader Comment

Hydrology Needs Statistics

SIR—Mr. N. J. Cochrane's letter (ENR Nov. 27, 1958, p. 8) concerning our statistical treatment of hydrologic data states that a "significant number of rivers exhibit some cyclic and determinate factors in their behavior," and he therefore considers the assumption of independence of the annual flows as "unwise."

Although the customary use of confidence curves implies sequential independence, this is not a basic assumption in the probability procedures. The assumption of independence happens to be the simpfest model. It is, moreover, often justified for annual flows in ordinary rivers.

For ordinary rivers any sequential correlation in annual flows is usually masked by the random fluctuations which occur. Such fluctuations will of themselves give rise to variations in the mean. The significance of the variations was shown by W. S. Gossett in his paper on the t-test. If correlation does exist, we have shown how this may be taken into account in estimating storage capacity by certain probability methods (Proceedings, ASCE, vol. 84, HY5, Oct. 1958).

It is agreed that the Nile at Aswan does show sequential correlation in the annual flows. In the 43 years 1904-1946, there are two runs of seven years, one above the mean and one below it, and another of five years above the mean.

Such runs would be most unlikely if the annual flows were independent. It is, however, believed that this correlation is caused by the natural regulation by lakes through which the river flows.

A similar sequential correlation is exhibited by the Niagara River below the Great Lakes, and would be expected in the Shire River which drains Lake Nyasa.

Mr. Cochrane also believes that mean flows taken over decades sometimes show changes so great that it is not feasible to adopt a "constant mean" and cites the Nile as an example. The substantial difference of about 33% in the estimated mean flows of the Nile for the 27-year period prior to 1898 and the 46-year period subsequent to that, may be due in part to this sequential correlation. But it could arise from the effect of Aswan Dam on the method of measurement.

The article on probabilities (ENR Aug. 28, 1958, p. 35) is an attempt to give a statistical approach to a hydrological problem because it is believed that if hydrology is to develop as a science from its present descriptive phase, then statistical techniques must be used.

W. B. LANGBEIN
G. N. ALEXANDER
United States Dept. of Interior
Geological Survey
Washington, D. C.

Speedy Bridge Erection

SIR—Naturally anything that pertains to bridges, especially the suspension type, would be of interest to people in our company. We were keenly interested in the article, "Six Months to Bridge the St. Lawrence" (ENR Dec. 11, 1958, p. 7).

Our hats are off to the guys in the American Bridge Division who erected this span in so short a period. We know well what a great achievement this is and we are not trying to detract from their pleasure. However, just to keep the record straight, and to keep anyone from detracting from our capabilities, we refer you to "Construction Record Set on Alcan Suspension Bridge" (ENR Jan. 13, 1944, p. 65). Comparable work on the latter bridge was completed in four months and one week.

Just thought we'd remind you.

ALBERT NERONI
Advertising Manager
John A. Roebling's Sons Corp.
Trenton, New Jersey

Hints on Building Failure

SIR—You state that wind caused the collapse on Sept. 11, 1958, of the steel frame for the 11-story building being erected for Union Carbide Canada Ltd in Toronto (ENR Jan. 8, p. 23).

In previous issues, (ENR Oct. 30, 1958, p. 8 and ENR Dec. 25, 1958, p. 8) you emphasized column lengths. But

Engineering News-Record welcomes expression of opinions from its readers. Comments should be as brief as possible and pertinent to subjects at current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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One of the basic requirements here was to achieve unobstructed floor space with economy. Architects Weed, Russell, Johnson & Associates found the answer by using a concrete shell in the form of a folded plate. This construction made it possible to span the entire floor area with only one interior row of columns . . . and suspend the second floor from the roof. The result: 163,715 square feet of *fully flexible* floor space, so important to any retail selling operation.

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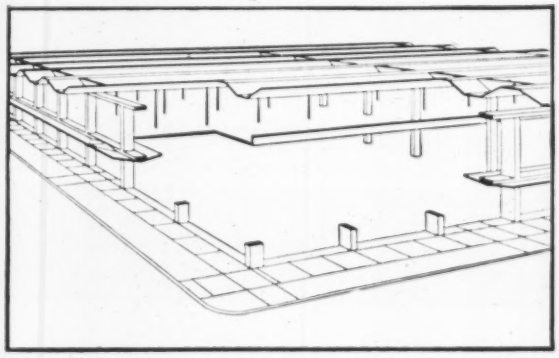

Isometric view showing 125-foot c on c spacing of main columns. Floor slab is supported by 3-inch plates welded together to form a hanger. Hangers are spaced 25 feet c on c.

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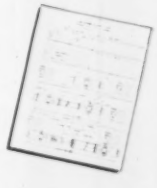
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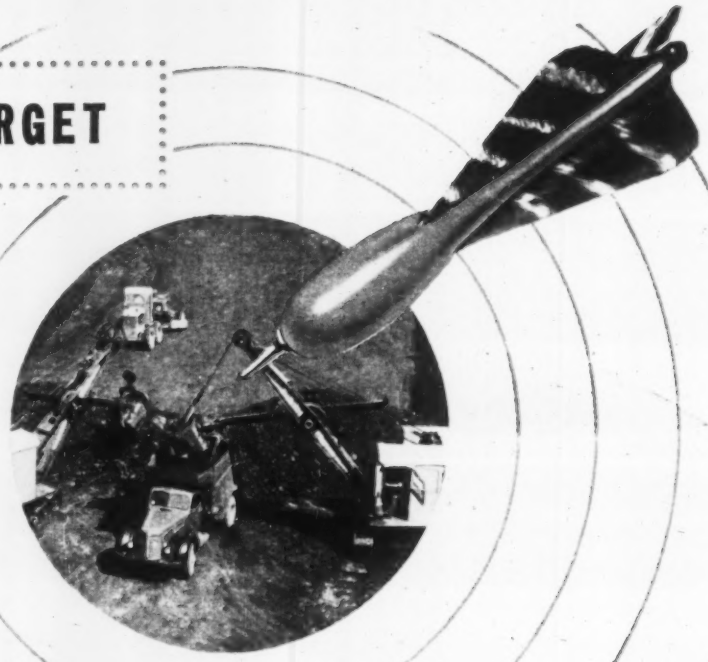
RUST TARGET



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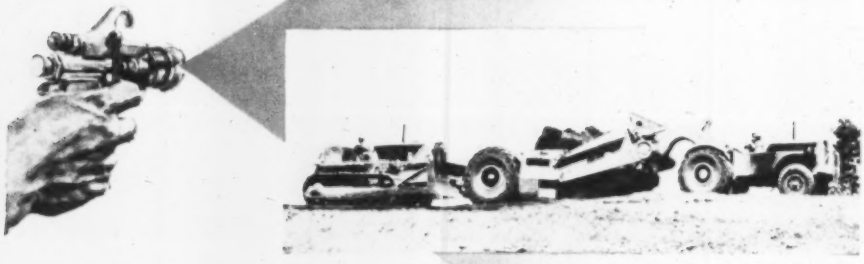

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in none of your articles did you disclose enough technical information to form an independent judgment on the reasons for the collapse.

The photograph published in your issue (ENR Sept. 11, 1958 p. 27) bears out the final conclusion. But the weak point in the structure has still not been revealed.

You indicate that "deep horizontal trusses between each column at each floor level" are to be used in the reconstruction and this will undoubtedly help.

However, I am offering the following two suggestions for what they are worth—

The steel frame as it appears offers considerably more surface to hold and resist wind pressure than it would after the structure is completely enclosed. Also, in buildings of this type the columns should be checked for strength diagonally across the building.

L. Davidson
Consulting Engineer
New York City

Who Made It So Wide?

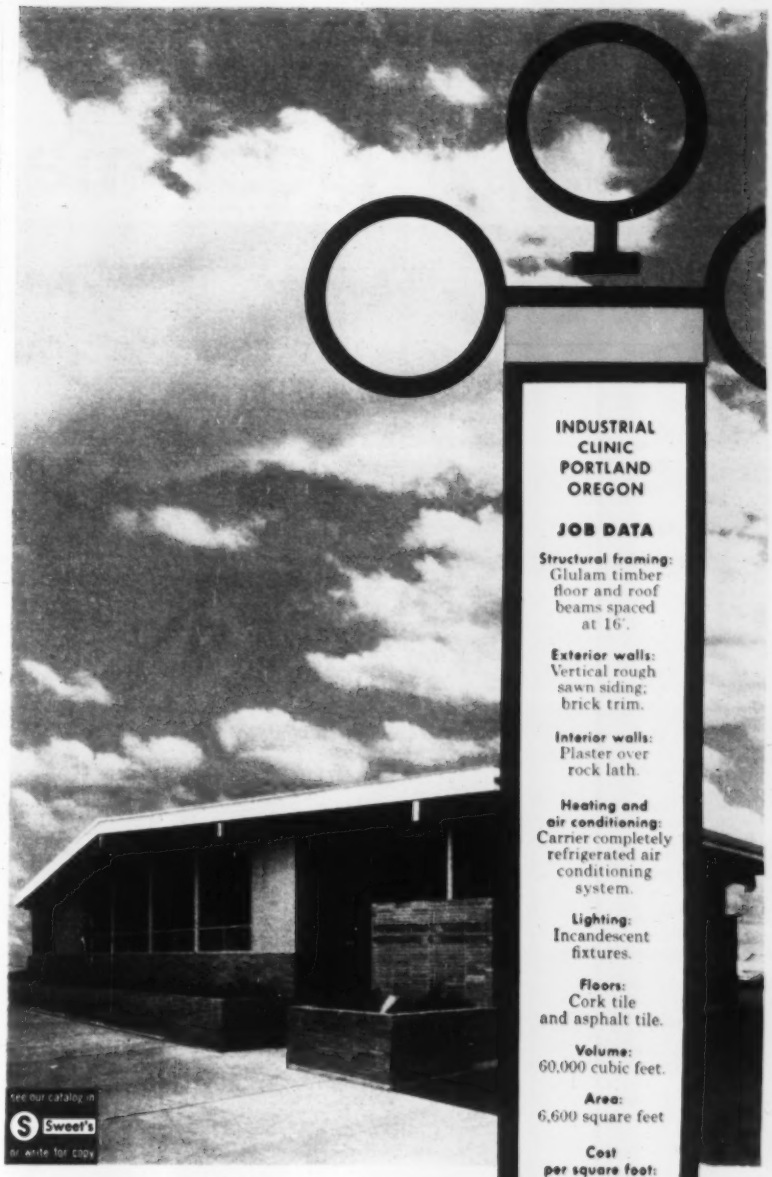
Sir—We have noted with pleasure your (ENR Dec. 18, 1958 p. 25) article about the "World's Widest Tunnel," but we also note with dismay that no mention whatsoever is made of the engineers who designed this structure and the remainder of Boston's John F. Fitzgerald Expressway. It is a joint venture participated in by Fay, Spofford & Thorndike, Inc. and our office, Charles A. Maguire & Associates.

Frederick H. Paulson
Charles A. Maguire & Associates
Providence, R. I.

Editor's Note: The tunnel's contractor: V. Barletta Company.

For Your Calendar . . .

National Lighting Exposition, Coliseum, New York City, Mar. 1-4.
32nd Highway Engineering Conference, University of Colorado, Boulder, Colo., Mar. 5-6.
American Society of Photogrammetry, Shoreham Hotel, Washington, D. C., Mar. 8-11.
American Railway Engineering Association, Sherman Hotel, Chicago, Ill., Mar. 9-11.
American Society of Mechanical Engineers Aviation Conference, Statler Hilton Hotel, Los Angeles, Calif., Mar. 9-12.
Georgia Highway Conference, Georgia Institute of Technology, Atlanta, Ga., Mar. 9-10.
American Congress on Surveying and Mapping, Shoreham Hotel, Washington, D. C., Mar. 11-14.
9th Annual Iron and Steel Conference, Pick-Roosevelt Hotel, Pittsburgh, Pa., Mar. 11-12.
Mississippi Valley Conference of State Highway Departments, Annual Convention, Edgewater Beach Hotel, Chicago, Ill., Mar. 19-21.
21st Annual American Power Conference, Hotel Sherman, Chicago, Ill., Mar. 31-Apr. 2.
Southern Municipal and Industrial Waste Conference, University of North Carolina in Chapel Hill, Apr. 2-3.


INDUSTRIAL CLINIC PORTLAND OREGON
JOB DATA
Structural framing: Glulam timber floor and roof beams spaced at 16'.
Exterior walls: Vertical rough sawn siding, brick trim.
Interior walls: Plaster over rock lath.
Heating and air conditioning: Carrier completely refrigerated air conditioning system.
Lighting: Incandescent fixtures.
Floors: Cork tile and asphalt tile.
Volume: 60,000 cubic feet.
Area: 6,600 square feet
Cost per square foot: $11.00.
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Contractors: Juhr and Son, Portland, Oregon

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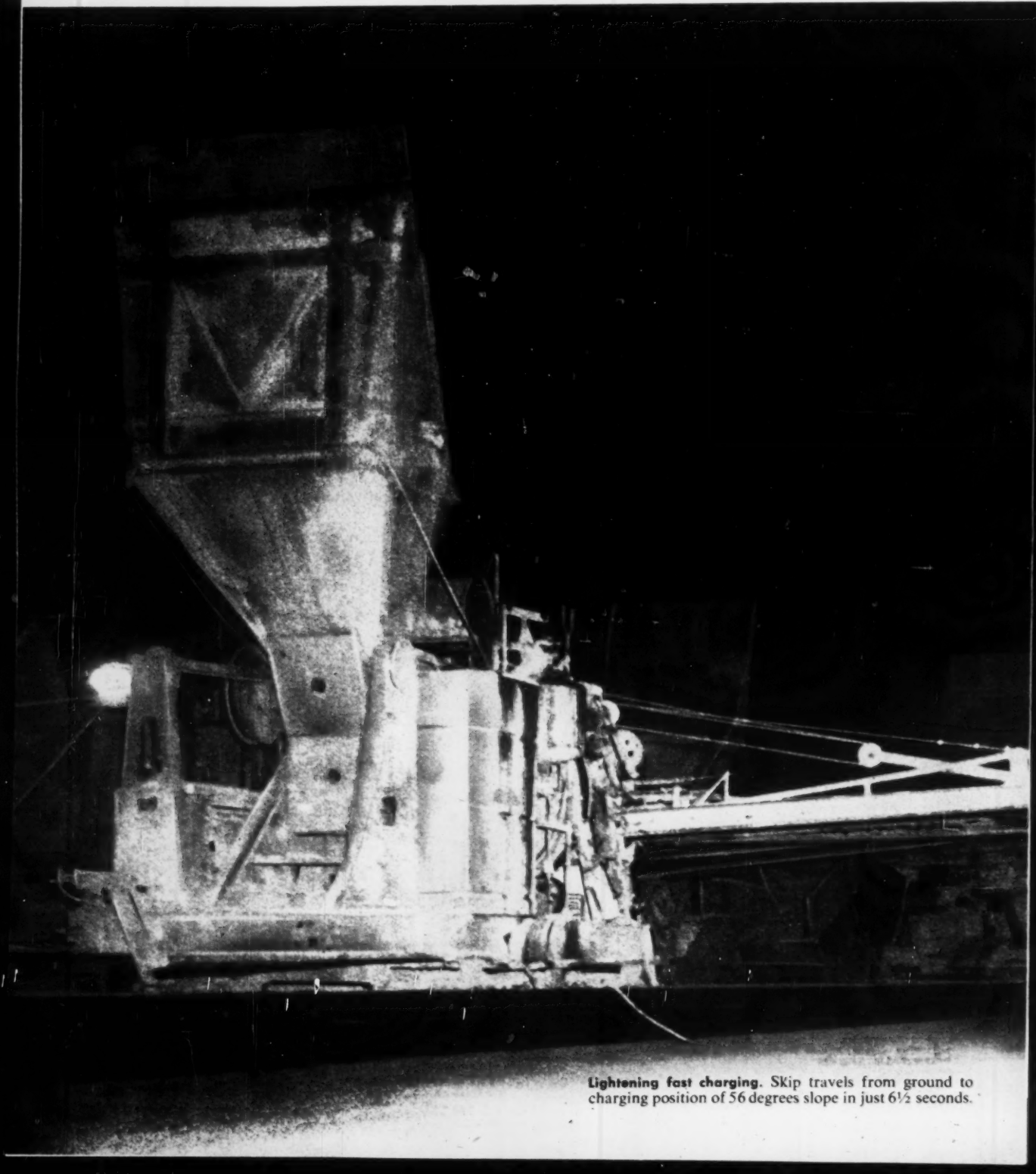

Lightening fast charging. Skip travels from ground to charging position of 56 degrees slope in just 6½ seconds.

record we've ever had"

say Nolan Bros.

Nolan Bros., Inc., are turning the plains near Wichita Falls, Texas, into a huge new Strategic Air Command base. The general contractors are using 4 Worthington pavers regularly—one on a standby basis—to pour more than 530,000 cu. yds. of concrete needed for this latest link in America's defenses.

Despite temperature extremes brought on by boiling summer sun and icy blasts from Texas' famous northers, the Worthington pavers operate 10 hours per day, 6 days a week to ready the tremendous network of runways, warm-up aprons, and alert strips known as Sheppard AFB. And when the pavers are laying concrete strips from 19 to 30 inches thick, Nolan Bros. are sure of steady, reliable performance from the Dual Drum Pavemaster machines. "Best point about the Worthingtons," says Chuck Nolan, partner of the contracting firm, "is their low maintenance costs. Since they've been on the job costly repair bills are a rarity."

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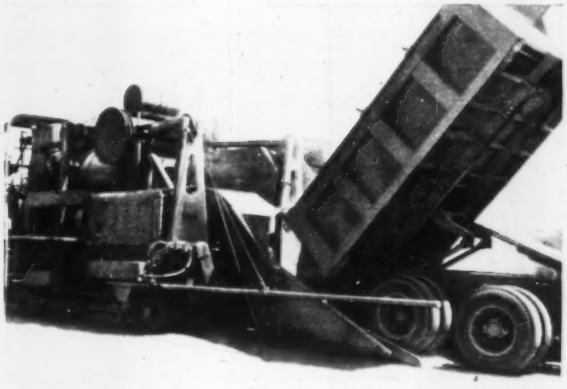
2. After you buy... Worthington invites you to send 1 man to our factory in Plainfield, N. J., for a 3-day equipment manufacturing checkout with all his expenses paid.
3. After you buy . . . Worthington sends a serviceman to check out the paver on its original operating site for an entire week.

For the full story on the money-making features of Worthington pavers write for descriptive bulletin 1270-B1. And for more information on the new 3-Point Check-Out Plan, contact Worthington Corporation, Section 65-11, Plainfield, N. J. In Canada: Worthington (Canada) Ltd., Brantford, Ont.

WORTHINGTON



Fed by fleet. 25 batch trucks, each carrying four batches, work on fast schedule to maintain rapid paver operation.

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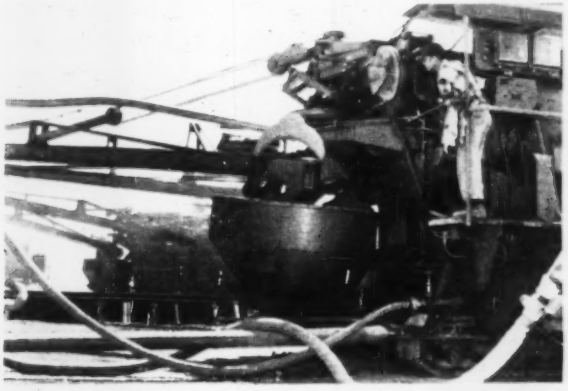

Worthington discharge bucket eliminates split batch in drum, saves time by easily discharging full or part batches.

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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

A-POWER BOOMLET—January contracts for private atomic power topped nuclear awards for all of 1958 or 1956. And the $65.1-million total for three power plants was just a shade under the entire 1957 total. Biggest project is a $33.1-million reactor scheduled for Pierre, S. D.

CONTRACTS ON THE WING—Contract awards for work at Chicago's O'Hare International Airport may be coming in early spring. The city sold $120 million in bonds, which will be used to start the airport's three-year expansion program (ENR July 3, 1958, p. 40).

BRIDGE GIRDERS COLLAPSE—Four girders, each weighing 50 tons, plummeted 80 ft last week as they were being erected for a high-level bridge over England's Manchester Ship Canal at Barton. Three workmen were killed, four were injured. The girders were resting on a permanent 80-ft-high concrete pier and on a temporary tubular-scaffolding trestle, put up a few days before. Workmen were joining the girders to the next section when the trestle buckled and the girders fell.

CANADA STILL BUILDS THEM—Canadian National Railways is considering the extension of its Quebec City-LaMalbaie line 175 miles northeast to Baie Comeau, a growing industrial community on the sparsely populated north shore of the St. Lawrence River. The extension would follow the shore and require a major bridge across the Saguenay River.

FAST MOBILIZATION—Contractors are modernizing and expanding their equipment fleets at a record pace, judging from orders placed last month. Manufacturers report orders set a new January record and were the highest of any month since May, 1958.

THREE-DAY WEEK—Plumbers in the Detroit area are now working a 24-hour week—eight hours, three days. It will go on until March 15. The short week is the first spread-work device put into effect by skilled craftsmen in the area since the depression.

FOR BROADER PLANNING—New York State is creating an Office of Transportation. Purpose: to develop an over-all transportation policy with the U.S. government, nearby states and local communities.

WANT AN ISLAND?—Ellis Island in New York Harbor is up for bid again. It's the third time in five years the U.S. government has tried to sell the former immigration center. Bids were last received in February 1958. High bidder at $201,000 was Sol Atlas, New York City commercial property developer. Low bid was five cents. All bids were rejected; the government thought they were too low.

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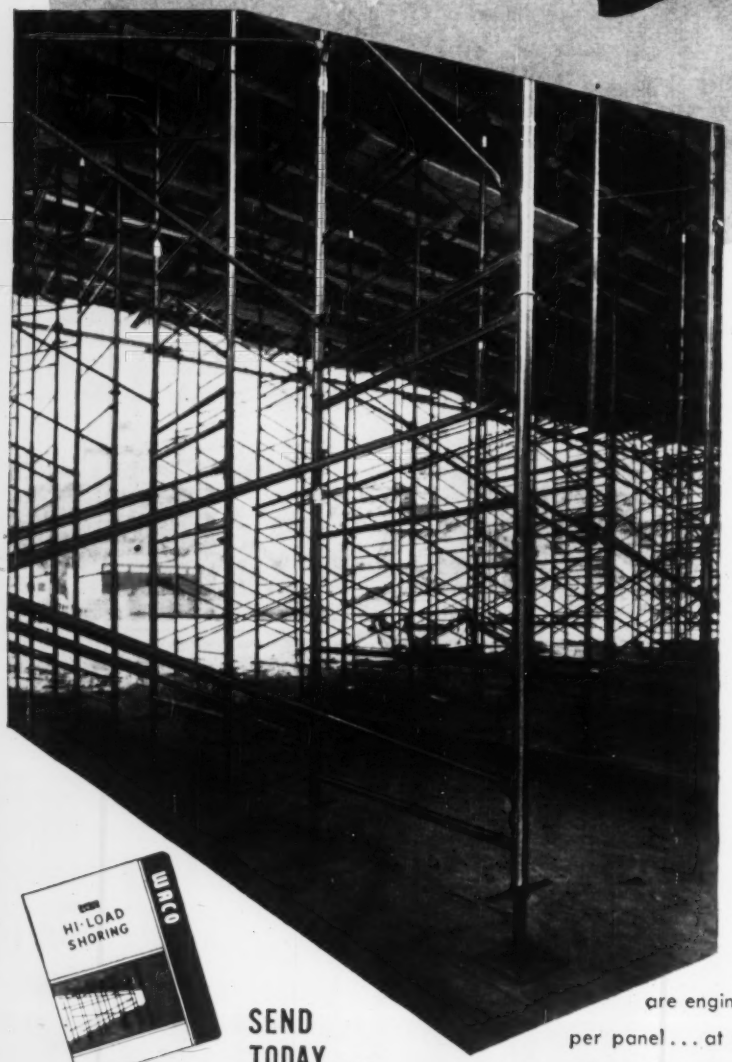

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WASHINGTON OBSERVER

- **Senate bill would push manufacturers out of equipment financing**
- **House trims housing bill as Democrats try to forestall veto**

● **Democrats are hard at work trying to make their spending bills veto-proof.** House Speaker Sam Rayburn is doing the same kind of missionary work on the housing and airport aid bills that Senate Majority Leader Lyndon Johnson did earlier. That is, trim and whittle—to ease the impact on President Eisenhower's fiscal 1960 budget.

The airport bill is a case in point. Intervention by Speaker Rayburn resulted in a House committee scaling down the fiscal 1960 aid sum to $65 million—the figure the President proposed. But whereas the White House proposes declining sums in the subsequent three years, the House and Senate propose $100 million annually. **Prospect: Congressional compromise at about $82.5 million for fiscal 1960, $100 million a year thereafter.**

The President's first decision—to veto or not—probably will come on the housing bill. Congress will probably complete action on it within the next two or three weeks—almost certainly before Easter.

House and Senate versions are close in principle and not far apart in detail now that Rep. Albert Rains' House subcommittee has yielded to the leadership's economizing pleas. Major issues confronting the coming House-Senate conference committee, where final Congressional adjustments will be made, apparently will be direct veteran loans (the House wants $300 million available; the Senate, $150 million) and urban renewal authorizations (the House bill calls for $1.5 billion in three years; the Senate's $2.1 billion in six).

Democrats are mustering arguments why President Eisenhower should sign. They point out neither item takes a big bite out of 1960's budget. The veterans loan program is discretionary, and the funds don't have to be spent if the need doesn't become overwhelming.

The urban renewal authorization would have no fiscal impact on the new budget, according to the Democratic argument. Congressional spokesmen on housing now figure that only $250 million has actually been spent out of total urban renewal authorizations totaling $1.4 billion since 1949.

● **Keep your eye on Congressional hearings now under way on two bills** aimed at forcing General Motors Corp. out of the financing business and keeping other automotive manufacturers out of the field.

One of the bills would apply to some construction equipment, the other wouldn't. Sen. Estes Kefauver (D., Tenn.) would ban manufacturer financing and insuring of passenger cars only. But Sen. Joseph C. O'Mahoney (D., Wyo.) wants to apply the ban on financing by manufacturers to all motor vehicles—and specifically includes trucks and off-the-road earth-moving equipment in his bill.

Senator O'Mahoney is eager to get his idea into any bill Congress adopts. He feels it is just as important to get the big manufacturer out of financing heavy construction equipment purchases as out of the passenger car field. He cites GM's recent acquisition of the Euclid Road Machinery Co.

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ENGINEERING
NEWS-RECORD

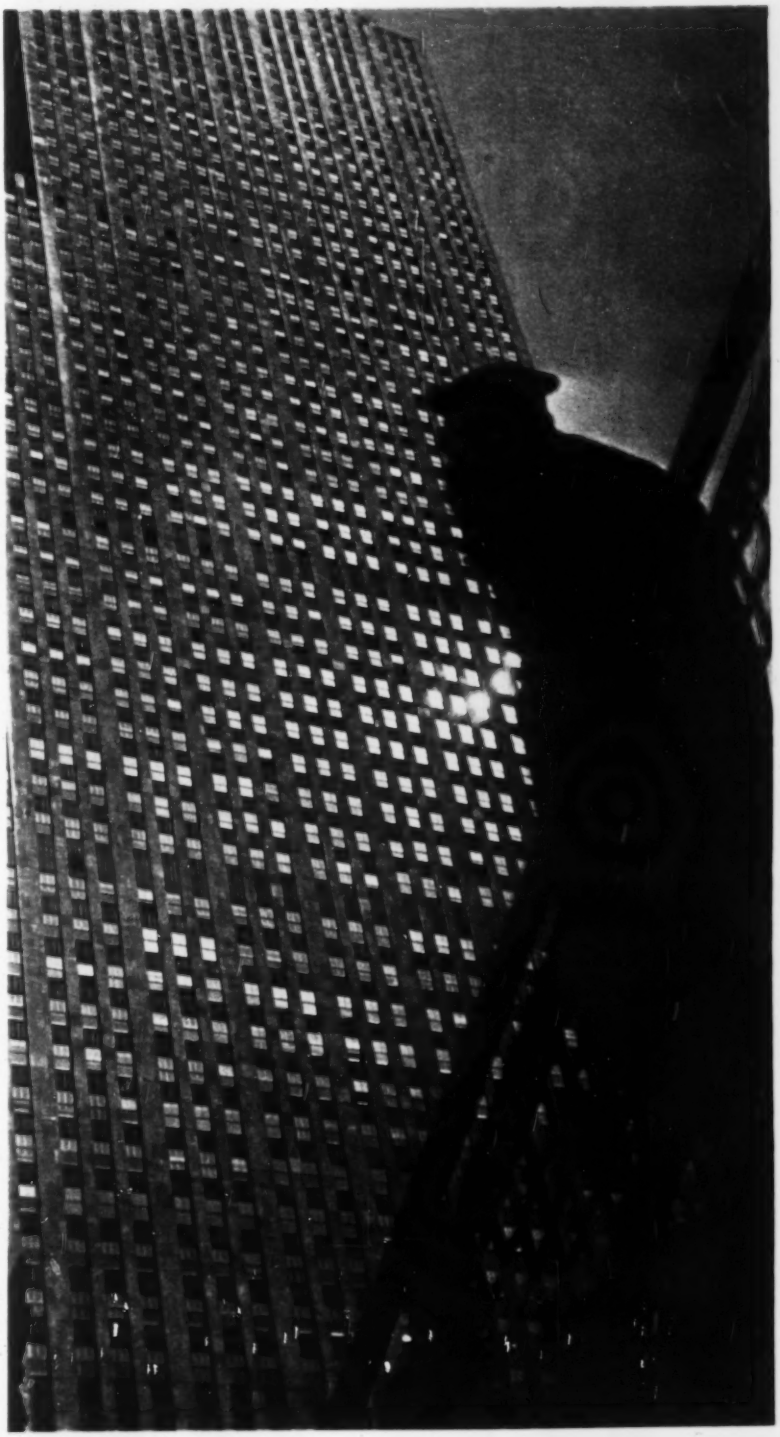
Skyscrapers: How Big Is Too Big?

How high can you build a building and still make it pay? Fifty stories, 60 stories, 102 stories, a mile high?

Would it be practical, for example, to construct the mile-high building proposed last year by Frank Lloyd Wright? Would anyone want another Empire State Building?

Chances are pretty slim that anyone would put up the money for another Empire State Building. And it is highly improbable that financing could be arranged for a mile-high building in the foreseeable future.

In fact, 40 stories is an upper limit, except in very unusual circumstances. That's the consensus of investors, builders and architects prominent in skyscraper construction surveyed by ENR.



• Why the ceiling?—One architect emphasizes two factors influencing skyscraper construction:

• High construction costs make great height a greater financial risk than it once was.

• Most investors are interested in the all-purpose building that will give the greatest return under current market conditions. They are not interested in building high just for the sake of building high.

Ely Jacques Kahn, New York City architect, says height is a balance of three things: size of lot, economics and esthetics.

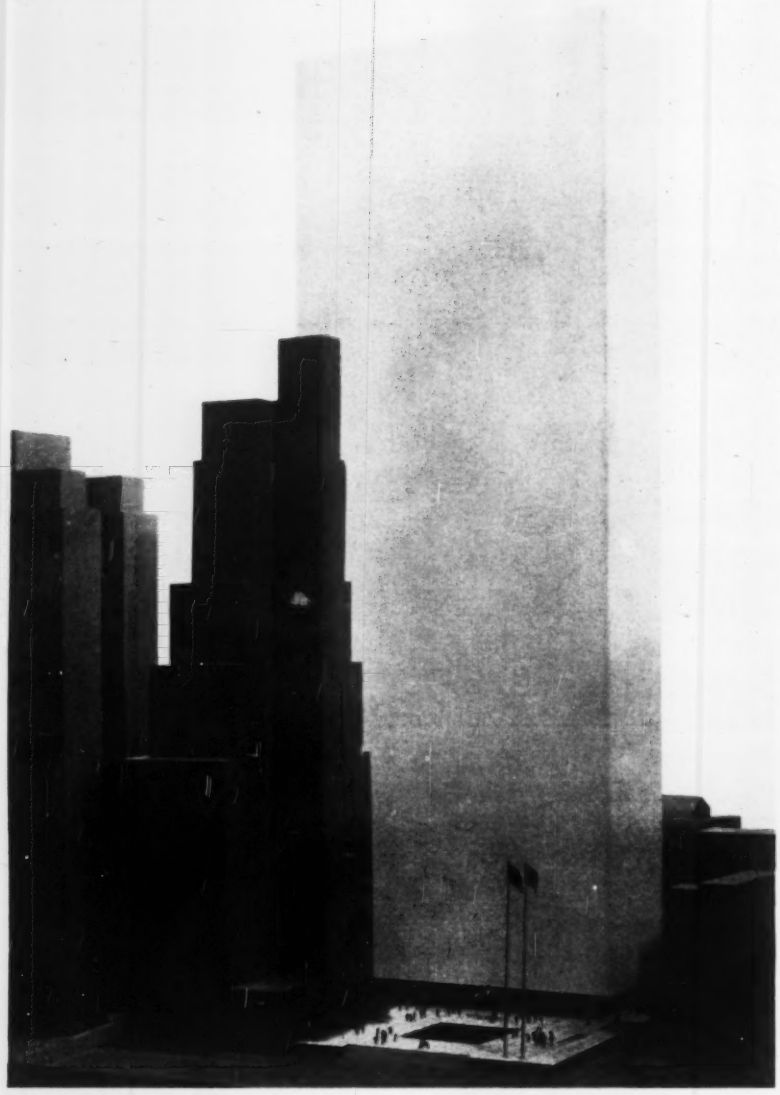
"The current trend is toward buildings between 20 and 40 stories high," he says. "Above these heights, the structure often becomes a financial risk. The obvious exception to this is the Chase Manhattan Bank, which will be 60 stories."

Another exception is the proposed Grand Central City, which will be 55 stories high. In this case, the designers chose greater height to give the building more distinction—at the expense of more rentable floor space (see p. 23).

Height is no bargain, says a staff member of Welton Becket, Los Angeles architect-engineer. "Figuring the increase in materials and labor the higher you go, very tall buildings are uneconomical," he says. "For pure investment purposes, moderate heights—20 to 25 stories—are most favorable."

The plot is an important factor in deciding height, says Richard Roth, New York City architect and one of

. . . Building height is limited by size, shape and cost of plot



SIXTY-STORY Chase Manhattan Bank project, outlined in block model, will tower above surrounding buildings. It's an exception to usual limit of 40 stories.

the designers of Grand Central City. "Each parcel of ground is so different from the next that each presents a special problem and it takes careful study as to what height and shape the building should take," he says.

Price of the plot counts too. The more expensive the land, the taller the building must be to insure an adequate return. "Practically speaking, land should cost 10% of your building cost," says William Tabler, hotel architect.

But if the building is too tall for the plot, too much space will be taken up by elevators, lobbies, corridors, stairs, plumbing and mechanical equipment and ducts. Inefficiency of the design will make an adequate return from rents impossible.

• **The contractors' view**—Erwin S. Wolfson, chairman of the board, Diesel Construction Co., New York City, says the minimum height of a building should be such that net income will at least amortize initial construction costs. Whether the building should be higher than the minimum depends on how much the investor wants to spend.

As an example, Mr. Wolfson points to the building at 100 Church St., New York City, which he helped finance and construct. That building had to be 10 stories high to recover first costs. The investors decided to add another 10 stories because the additional space would yield a larger return and the money to finance construction was available. But the backers considered anything over 20 stories on that site too risky in today's market.

"Why do I build a 20-story building on a plot where I can build two 10-story buildings for less money?" asks John Tishman, of Tishman Realty & Construction Co., New York City.

"There is prestige to a higher building, and more people will clamor to rent space in it. What's more, it gives you more rentable space. But height invokes a cost penalty. To build the 38th floor of a building costs twice as much as the second floor."

• **Effect of zoning laws**—I. M. Pei, architect for Webb & Knapp, New York City realtors, believes economics will dictate height more than will zoning regulations.

"Open spaces should be encouraged," he argues, "and zoning laws should be altered to urge this. . . . If a plot is totally covered, whether with one story or ten, it is not an improvement to the city. But if a building has greens and pleasant walks surrounding it, then it is a real asset."

In many cities investors don't sponsor tall buildings because they are afraid they won't be able to rent the space—not because of zoning rules.

Melvin A. Silverman, Houston builder, sets 25 stories as his limit; the cost of going higher, he believes, is prohibitive. Thomas Moore, Dallas engineer, puts the optimum height at 20 stories.

Mr. Roth calls attention to the influence of tenants on size and shape of buildings. Owners will sometimes add five floors to attract a big-name tenant who wants the prestige of renting high up, he says.

• **Future prospects**—Though the present trend is to buildings 20 to 40 stories high, conditions may change. Mr. Pei believes improved techniques will make greater heights economically feasible. But the real tall building of the future will require an equally outsize plot and a prestige tenant.

Advances in structural and mechanical techniques may involve development of higher speed—possibly double-deck—elevators, to reduce the amount of space now wasted in elevator shafts. High-strength, lightweight materials will be needed for floors, roofs, walls and structural framing. More efficient equipment and greater mechanization of construction are also a necessity.

Floor Space Gives Way to Esthetics

In the interest of beauty, the design for a proposed New York City skyscraper sacrifices 600,000 sq ft of rentable floor space.

The final design of Grand Central City—one of the world's largest office buildings—calls for less space than originally planned, but more height. There will be no decrease in building costs.

These are the reasons:

• The $100-million structure will be erected in a choice mid-Manhattan location—the strategic 3½-acre site adjoining Grand Central Terminal. It will tower above surrounding buildings. The architects felt that distinction was of prime importance.

• Originally, the skyscraper was to be 50 stories high, rectangular in shape, with 3 million sq ft of floor area. But this plan, according to the architects, would have occupied too much of the site.

To create a feeling of greater freedom and to provide maximum light and air, they changed the building form to an elongated octagon. And they set the building back on one side to create a 75-ft-wide street. (A feature of this treatment will be a broad roofed-over plaza, 40 ft high.)

• The architects also lowered the base of the building to harmonize with the roof line of the adjoining railroad terminal. And they increased the building's height from 50 to 55 stories.

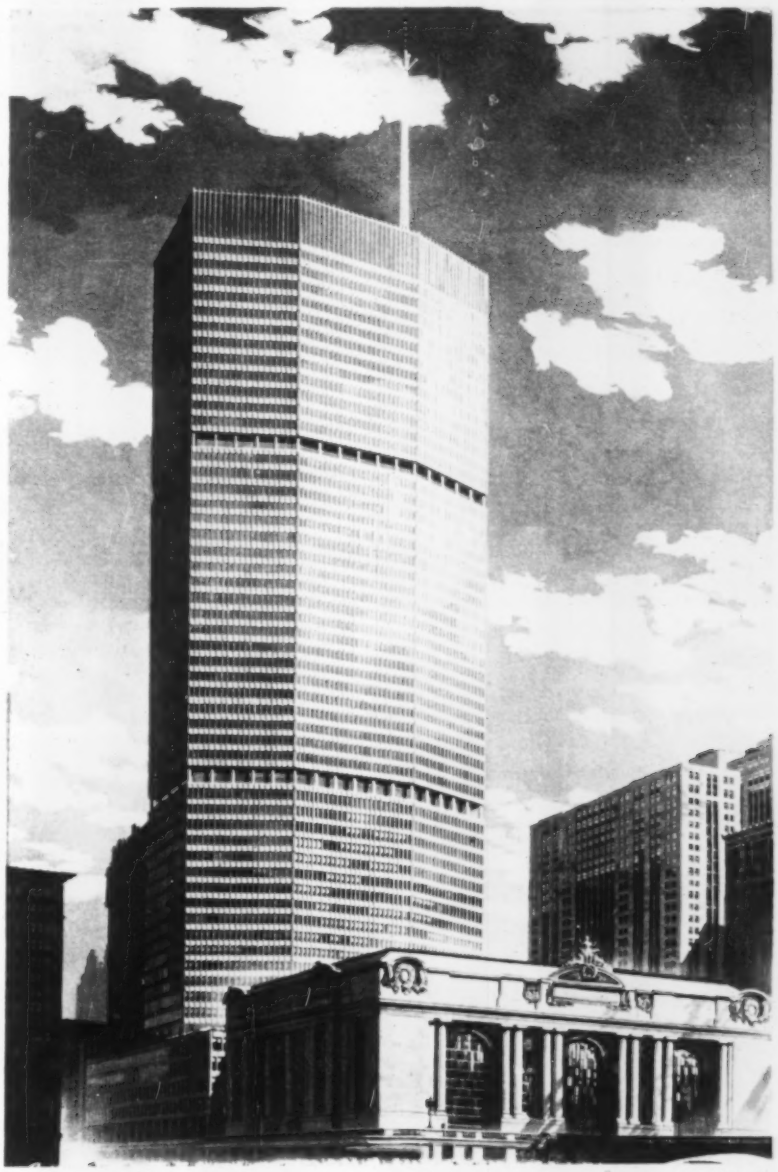
As a result, the floor area was reduced to 2.4 million sq ft of rental area. Including elevator, hall and service space, the building has 2.65 million sq ft. The tower of the building will have 50 elevators.

The striking skyscraper design was developed by three distinguished architects: Walter Gropius, senior partner of the Architects Collaborative, Cambridge, Mass.; Pietro Belluschi, Dean of the School of Architecture, Massachusetts Institute of Technology; and Richard Roth, of Emery Roth & Sons.

The multi-faceted tower will be set off by two transitional levels from a broad six-story base. The tower's straight vertical lines will be relieved by two recessed surfaces extending around the length of the building. The entire structure will be enclosed in metal, masonry and glass.

Steel design calls for girder spans as long as 32 ft. At the bottom the girders will bridge the railroad tracks over which the new building will sit, thus eliminating intervening load-bearing members. Each column saved will add 25 sq ft of clear interior space per floor.

The structure will replace the existing six-story Grand Central Terminal office building. The building will occupy the plot bounded by Vanderbilt Avenue, East 45th Street and Depew Place.



New York City's newest skyscraper will be octagonal, 55 stories high.

The intricate network of cross transfer drives and interior vehicular roadways, giving the building direct access to the uptown and downtown Park Avenue ramps, have been retained in the new building plan, as have the interior walks and moving-stair connections to and from the main terminal concourse.

Grand Central City will exceed in floor area the RCA Building, with 2.3 million sq ft, and the Empire State Building, with 1.8 million sq ft.

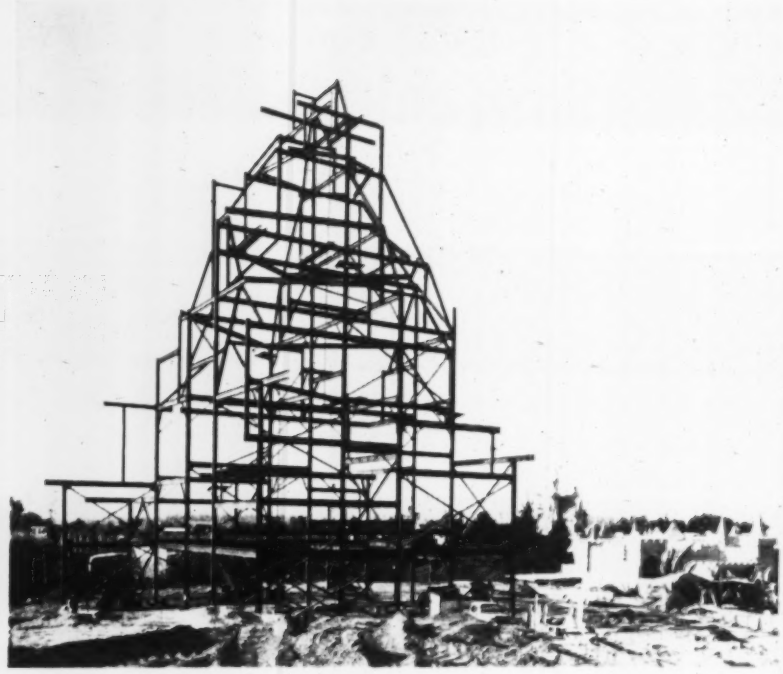
Construction is planned to get under way late this year for completion in 1962. About 25% of the building space has already been leased.

The site is being leased for 80 years from the New York Central System and the New Haven Railroad.

James Ruderman is consulting structural engineer. Diesel Construction Co., New York City will erect the building.

A TV Spectacular

Reinforced concrete TV tower stands 535 ft high on the Bavarian mountain of Oxhead, near the East German border. Built as a complete package, it contains radio and TV studios, transmission equipment, power transformer and substation.

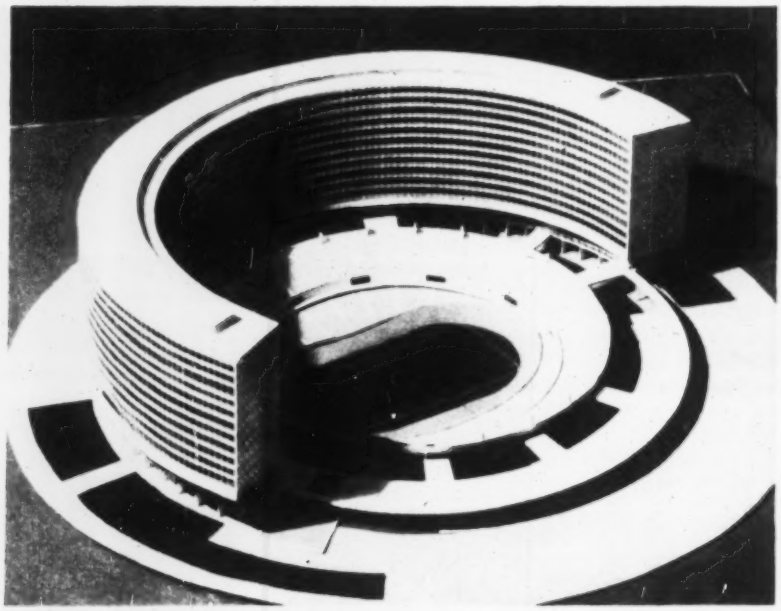


Guess What This Is

This unusual steel frame, 145 ft high, is an important part of the new features at Disneyland Park in southern California. It will support a replica of the Matterhorn, a favorite target of mountain-climbers in the Alps.

Disneyland also will have an underground lake for youngsters (and oldsters) who want to take a submarine ride, and an extensive monorail system. Cost of all the new work is estimated at more than $3 million.

Contractor is James I. Barnes Construction Co., with steel work by American Bridge Co. The new features will be in operation by June 1.



Arena in the Round

A 10-story office building will circle half the new Sports Palace at Place de la Defense in Puteaux, a Paris suburb. A banked cycling track will surround the central soccer field. Architect Pierre Dufau's stadium design will hold 12,000 persons.

Reactor Construction May Get Subsidy

- **AEC Chairman McCone indicates U.S. must give some financial aid in developing nuclear power, but Democrats want much more.**
- **You can expect Congress to add projects to the Administration's plans for six new reactor starts.**

The Administration is ready to move forward with a multimillion-dollar program involving construction starts on at least six atomic reactors in the fiscal year beginning July 1. And for the first time, industry may be in line for a subsidy on construction costs.

John A. McCone, chairman of the Atomic Energy Commission, outlined the Administration program for the fiscal year 1960 to the Joint Congressional Committee on Atomic Energy.

Proposed legislation submitted by AEC would authorize $115 million in appropriations for all types of plant acquisition and construction. However, interest centers on the $75 million tagged for development of civilian atomic reactors.

Mr. McCone sees his program as the first step toward attaining economic nuclear power in high-cost areas of the U. S. within ten years, and in friendly foreign countries in half that time.

However, angry clashes in the first days of hearing make it clear that the Democrats regard the AEC proposals as only a feeble, inadequate step in the right direction. As a result, they are expected to load on projects of their own.

Highlights of the AEC program for 1960 include:

- Design and start of construction on an advanced boiling-water prototype reactor, possibly incorporating nuclear superheat.
- Start of construction on an "experimental" gas-cooled reactor, which admittedly will not be large enough to "serve as a true power-producing prototype." This disappoints Democrats who, when they authorized the project last year, wanted a plant with capacity of 40,000 kw.
- Research and development leading to construction of a more advanced, high-temperature, gas-cooled reactor by the Philadelphia Electric-General Dynamics group.
- Construction start on an experimental organic-moderated reactor with operating level of 20,000 to 40,000 kw.
- Design work leading to eventual construction of an improved sodium-reactor experiment having an output of some 40,000 kw. AEC says design simplifications are expected to make "this reactor relatively inexpensive."
- Design and construction start on a nuclear plant with a capacity of some 20,000 kw, unless studies now under way "clearly indicate this is not appropriate at the present time." The idea is to develop small reactors practical for use by rural electric cooperatives or small municipal systems.
- Design and construction start on a low-temperature process-heat reactor to serve as a demonstration of the "technology, performance and economics" of such plants. AEC also is considering construction of a nuclear reactor as heat source for a saline-water conversion plant planned by the Interior Department.

Mr. McCone, in his testimony, recognized that the role of the federal government must change if the goal of attaining competitive atomic power is to be realized in ten years.

To date, industry has had to foot the entire construction bill for privately owned reactors. AEC help under the government-industry "partnership" program has been limited to underwriting certain research and development costs.

The commission, supported by the electric utility industry, has resisted Congressional demands that the government itself build prototype power reactors—that is, pilot plants that precede construction of larger, commercial-size plants—without waiting for industry participation.

Mr. McCone still won't buy the Democratic approach. He insists that AEC should build the prototypes only after industry has demonstrated insufficient interest. And he says that construction of large-scale reactors should be left entirely to private industry.

However, he says the commission is willing now to consider granting capital subsidies to companies building prototype reactors up to about 75,000 kw capacity. This marks a major change in Administration policy.

The AEC proposed a change in the law to permit grant of federal subsidies up to 50% of the total capital costs of an atomic power plant. This could make up a large part of the difference in construction costs for an atomic and a conventional plant. The idea is to avoid seriously upsetting utility rate bases and thus avoid making electric consumers foot the bill for atomic experimentation.

The Democrats are expected to accept the McCone program as far as it goes, but add authorization for construction of additional AEC prototype reactors—and possibly extend the subsidy provision to construction of large-scale reactors, too.

However, as one industry spokesman puts it, "Congress has never figured a way to make the executive branch spend money it doesn't want to spend."

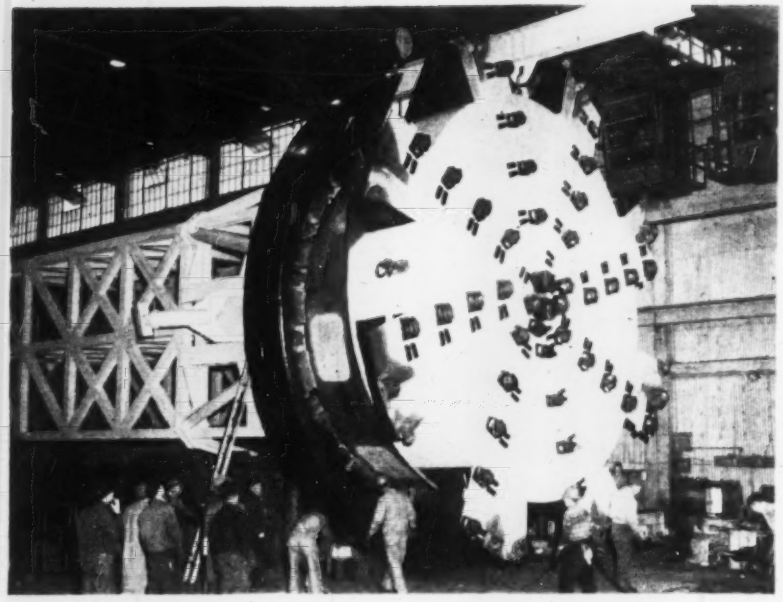
How Reactor Costs Break Down

Construction is a major item in the cost of a nuclear plant, representing with equipment and other capital items close to three-fourths of the total.

Spokesmen for the Power Reactor Development Co., which is building the $75-million Enrico Fermi Nuclear Plant near Detroit, have told Congress that costs on that job will break down this way:

Non-nuclear portion of the plant:	
Site and development	$925,000
Structures and equipment	$12,976,000
Interest during construction	$160,000
Total	**$14,061,000**

Nuclear portion of the plant:	
Plant costs, including fabrication of initial fuel element core, etc	$34,850,000
Administrative and overhead expense during construction	$2,170,000
Total	**$37,020,000**
Research and development through 1960	$20,514,000
Waiver of use charges for special AEC materials	$3,702,000
Grand Total	**$75,298,432**



Biggest Tunneler Goes to Oahe

The world's biggest mechanical mole gets a trial assembly at a Seattle factory before shipment to Oahe Dam in South Dakota. The tunnel digger has a rotary cutting head 29½ ft in diameter and costs $500,000.

The designer-manufacturer, James S. Robbins & Associates, will dismantle the machine and ship it to the Missouri River site by rail. At Oahe it will be reassembled into two sections, 18 and 30 ft long. Cranes will lower the sections 150 ft down a vertical 40-ft-dia shaft. At the bottom, the machine will be completely reassembled for operation.

Tunnel crews will put the machine to work drilling seven tunnels from 1,000 to 1,300 ft long.

Two earlier models are working now on the Oahe project, drilling tunnels 25½ ft in diameter. The new unit differs from the smaller models in allowing tunnel ribs to be placed within 6 ft of the tunnel face instead of 11½ ft. It also has a hinged joint that allows it to work on a 50-ft-radius curve. Hourly advance is expected to be 5 ft.

Work Begins on St. Louis Levee

Dirt has started flying in St. Louis on a $133-million flood-protection system for the city.

Army Engineers have signed up the Mary Construction Co. of St. Louis to build the first section, 4,600 ft of earth levee, for $822,000.

The over-all project, authorized by Congress in 1955, includes construction of 27,900 ft of earth levee, 32,900 ft of reinforced concrete floodwall, 27 closure structures, underseepage relief measures, 18 pumping stations, 10 pressure interceptor sewers and 17 low-level collector sewers. It also includes pressurizing three existing sewers.

The system will protect a 2,600-acre, heavily industrialized river-front area and an 800-acre, relatively undeveloped area against a flood of about 200-year frequency. Peak discharge of the design flood is 1.3 million cu ft per sec. This equals the all-time record flood of 1844.

St. Louis will pay about $8 million of the total cost—$5 million for right-of-way, the remainder in cash. The federal government will pay the rest.

Army Buys Prefab Nuclear Plant for Remote Areas

Prefabricated nuclear power plants will provide heat and power for some U. S. Army installations far from normal power sources—in the Arctic, for example. The Army has ordered one of the plants from Alco Products, Inc., for $3.2 million.

The new prefab plant can be delivered by air in 20 to 30 packages. No concrete construction is needed for shielding. The plant can be assembled and tested in about three months. It can also be dismantled and moved.

The plant generates 1,500 kw net electricity for heat and power and about 1 million Btu per hour in steam.

Ike-Mateos Meeting May Spur Start on Diablo Dam

A start on the long-awaited Diablo Dam may be nearing. Construction of the huge Rio Grande project was among the topics discussed by President Eisenhower and President Adolfo Mateos, of Mexico, during their meeting last week in Acapulco, Mexico.

Diablo was first proposed in a 1944 treaty between the U. S. and Mexico allocating the waters of the Rio Grande, Colorado and Tijuana Rivers (ENR Jan. 25, 1945, p. 93). The dam was one of three planned for the portion of the Rio Grande forming the international boundary. Falcon Dam, the first of these, began operation in 1953 (ENR May 15, 1952, p. 62).

Diablo Dam would be located just below the confluence of the Devil River with the Rio Grande—about 12 miles upstream from Del Rio, Texas (see map). It is planned as a multipurpose, earth and concrete structure, 6.4 miles long and 253 ft high. Across the river bed the dam would be a concrete gravity section 2,200 ft long.

Diablo would provide for irrigation and flood control. No power development is planned at present.

Design and construction of Diablo would be the responsibility of the International Boundary and Water Commission, which handles Falcon. The IBWC was set up under provisions of the 1944 treaty. It has jurisdiction for the river development program. The commission would issue bid invitations and award contracts.

Construction costs, estimated at $100 million, would be split between the two countries on the basis of water allotment from the dam's 5.7-million acre-ft reservoir.

Canadians Court Winter Work

Construction industry seeks to overcome seasonal unemployment through joint efforts on many fronts

The Canadian construction industry, which is responsible for about one-third of the country's present unemployment, has marshaled the cooperation of public and private agencies in an educational and promotional campaign to increase the volume of wintertime construction work.

Repair and maintenance work has already shown a substantial increase in winter months as a result of the campaign, according to the Canadian Construction Association. Emphasis is now on medium-sized projects. Ultimate goal is all-year-round industry.

Financial incentives to stimulate winter work appear to be paying the biggest dividends. But this is only one of the many promotional devices that have emerged since formation of the National Joint Committee on Wintertime Construction sponsored by CCA.

In mid-January, Canada's unemployment stood at 538,000—an increase of 98,000 over the December figure. Total number of jobholders, however, was only 5.5 million.

• **A cooperative effort**—The scope of the campaign far surpasses anything ever attempted or achieved by the U. S. construction industry. It runs the gamut from improvements in building techniques to changes in financing.

This is possible because the Wintertime Construction Committee is truly both "national" and "joint." In addition to CCA, it represents the Engineering Institute of Canada, National House Builders' Association, Royal Architectural Institute of Canada, Canadian Manufacturers' Association, Canadian Chamber of Commerce, Canadian Labour Congress, Canadian & Catholic Confederation of Labour, Central Mortgage & Housing Corporation, the Department of Labour and the National Research Council.

Most of these groups participated in a National Wintertime Employment Conference convened by the Federal Minister of Labour in Ottawa last July. The conference has focused widespread attention on the winter problem.

Out of the committee's work has come a number of promotional ideas—some already translated into action. Among them are these:

• Federal and provincial contributions to the payroll costs of municipal public works projects undertaken in the winter months.

• Increased research work on cold weather construction techniques.

• Liberalization of federal loans to residential builders.

• Accelerated depreciation allowances on capital investments made by owners in the winter months.

• Direct mortgage lending on rental housing projects by the Central Mortgage & Housing Corporation.

• Increased mortgage valuations and decreased interest rates on federally financed housing units built in winter months.

• A special program of small post office construction and more winter scheduling of federal construction.

• More publicity, aimed at owners, designers and construction firms, on efforts to reduce winter unemployment.

• **Promoting free enterprise**—One of the upshots of mounting interest in winter employment has been a conscious effort on the part of Canadian contractors to promote the free enterprise system.

They have been instrumental in getting the Joint Committee to espouse unemployment solutions that fall within the framework of that system.

The committee, for example, has commended the Minister of Labour for the government's financial assistance but suggested that emphasis be placed on incentives to privately financed construction, rather than on public works.

Some indication of what is being done in the public works field is a federal-provincial-municipal plan under way in Ontario.

The governments of Ontario and Canada are contributing to the payroll cost of any approved municipal work carried out during the months of December to May, provided the work is in excess of what would normally be undertaken. Federal government contribution is 50%; the provinces pay 25%.

In addition, the Ontario Department of Highways and the Department of Lands and Forests are embarking on multimillion-dollar expansion programs in campsites, forest access roads and highway projects—projects that would otherwise be shut down or not undertaken in the winter.

In an effort to minimize reliance on government assistance, CCA has urged organized labor "to accept its full share of responsibility in solving the winter unemployment problem." The "ever increasing tendency" to place responsibility on government, it says, is "jeopardizing the principles of free enterprise."

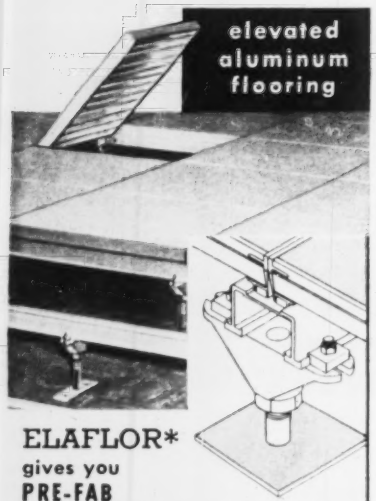
Water Level Drops, Then Bridge

A canal bank caved in and brought down a 50-ft bridge span in Massena, N. Y. Some observers believe low-water level caused the bank to fail.

The canal formerly channeled water from the St. Lawrence River Power Co., a subsidiary of Aluminum Co. of America. But the plant has not operated since last October.

Alcoa also owns the bridge. The company has maintained the 52-year-old structure as a part of Massena's town street system. The fallen section is a plate-girder side span.

Canal level was controllable by headgates at the river upstream from the new state power dam. For some weeks before the failure, water level in the canal reportedly had been about 10 ft lower than usual. One observer said a hard freeze probably caused the bank to heave and then disintegrate.



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Wheeler Gets '58 Hoover Medal

The Hoover Medal for 1958 went to Lt. Gen. Raymond A. Wheeler, U. S. Army (Ret.), former Chief of Engineers, in recognition of his distinguished public service.

The award was presented to General Wheeler last week at a dinner given by the Society of American Military Engineers, in Washington, D. C.

General Wheeler was Chief of Engineers from 1945 to 1949.

Since leaving the Army, he has been associated with the International Bank for Reconstruction and Development, as chief engineer and later as a consultant.

He directed the clearance and rehabilitation of the Suez Canal of 1956-57. Later he went to southeast Asia to work on a comprehensive plan for the watershed of the lower Mekong River.

Sponsors of the Hoover Medal are the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc.

Past recipients of the Hoover Medal include Herbert Hoover, Jr., Charles F. Kettering, Alfred P. Sloan, Jr., William Henry Harrison, Karl Compton and Malcolm Pirnie.

Around the World . . .

• **Seaway delay**—Shippers in the Canadian section of the St. Lawrence Seaway will have to wait a few weeks after navigation opens this spring before they can use the full 27-ft minimum depth. Early winter and a shortage of dredging equipment held up operations. Depth will be only 24½ ft in parts of the route at first. But by June 1, (3½ weeks before the June 26-27 dedication ceremonies), full depth is expected.

• **Argentina roads**—Argentina must reconstruct 1,860 miles of pavement between 1959 and 1963. Another 1,984 have to be improved. Cost will run to $61.5 million. National Highway Commission's plans up to 1963 also include 2,600 miles of new highway construction and 2,170 miles of new consolidated pavement.

• **A concrete step**—The Concrete Industry Board of New York City will soon issue a Manual of Recommended Practice in the Production, Delivery and Use of Ready-Mix Concrete. Its two previous manuals—for inspection and testing and for operations during hot and cold weather—have had a big effect on concrete quality in the New York area.

• **Death of a tollroad**—Florida's Gov. LeRoy Collins says there is no chance of ever extending the Florida Turnpike to the Georgia line. The governor had been fighting for a state-long turnpike. Now he admits that competition from interstate highways planned or under construction makes the picture "hopeless."

• **El Salvador roads**—A recent World Bank loan of $5 million is helping El Salvador construct an all-weather road network throughout its Pacific coastal plain. Twenty-one feeder roads totaling 230 miles are included. Main artery is the 190-mile Coastal Highway, now under construction.

• **Mexico roads**—Work is starting on a four-lane highway that will join Mexico's industrial city of Puebla with the Federal District. It will cost $21 million, run for 84 miles over mountainous country and cut driving time by more than two hours.

• **Geothermal power**—Rusia's first geothermal power station is being built over hot springs near the Pauzhetka River on the Kamchatka Peninsula. It will supply electricity to a fish-processing plant and homes.

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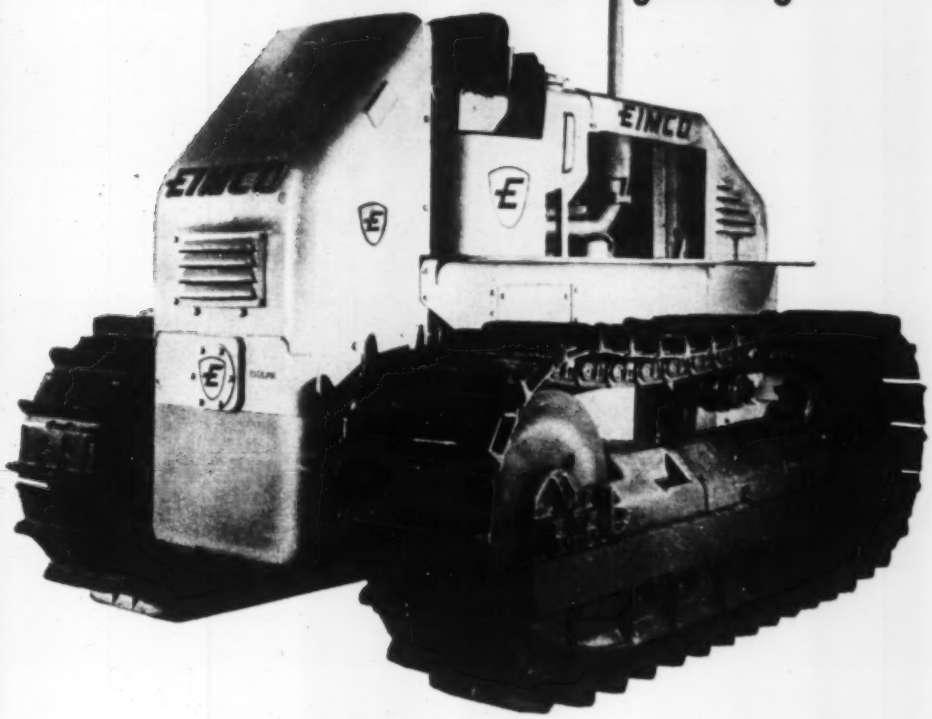

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Niagara project goes cross-country from intakes above to main power plant below Niagara Falls.

Niagara Project: Big Job, Big

"Mighty" is a word that comes easily to mind when looking at Niagara Falls. The same word describes the scope and design of the hydro project that will extract some of Niagara's enormous energy, now appreciated only by sightseers.

The Niagara power project is a monster in a field where things are done in a big way. Its 2.19 million kw will be the largest installed generating capacity in the free world. And its firm power of 1.8 million kw has few equals.

But there are things besides its size that set it apart from anything done before.

Its location alone presented extraordinary problems. Set in the midst of a city and also in some of the most highly industrialized countryside in the nation, a tremendous amount of planning and coordination was needed to prevent serious disruption of urban and industrial activity.

Keeping the sightseers satisfied was partly responsible for another distinctive feature—the pumped storage plan. Nothing approaching its magnitude has been built in this country before. With the pumped storage, the power demands in the low flow months of October and December can be met. It increases by at least 60% the amount of firm power available from the Niagara project.

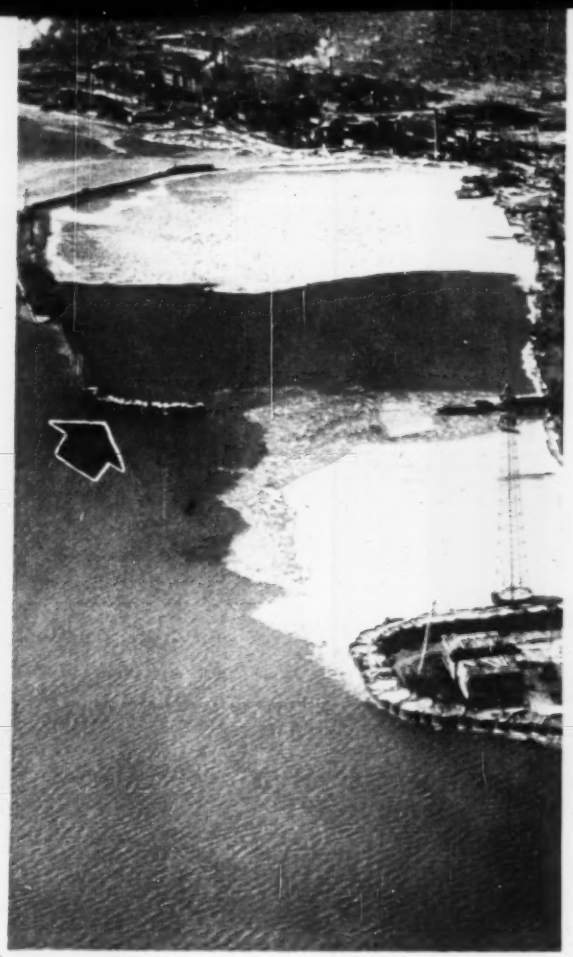
The demands of the tourist and of industry coincide during the day. Not even Niagara has that much water. The minimum daytime flow over the Falls is specified by U. S.-Canada treaty as 100,000 cfs during the tourist season. This can be reduced to 50,000 cfs at night. The extra water available for diversion is stored for use when demand exceeds normal flow.

The most interesting part of the project is the design of the covered conduits carrying the water from the river above the Falls to below the storage reservoir. The conduits are flexible structures, to counter possible movement of the rock in which the tubes are built.

The rock may have a tendency to move in on any excavation because of the release of locked-in stresses built up as the rock was formed. The key to the flexible design is three hinged arches of unprecedented size and loadings.

There is no record of rock movement at the Niagara site but movements are said to have been recorded at some distance from the site. On the assumption that rock movement may occur, the squeeze effect of this movement was provided for in the arch design. The conduits will be able to take this movement either all from one side or from both sides.

There are two 22,000-ft-long covered conduits, each 46 ft wide and 66 ft high, running parallel with a centerline separation of 200 ft. For flexibility, the tubes will be composed of three independent elements: the side wall slabs, bottom slab and the only load carrying member —the three-hinged arch. The arch loads



UPSTREAM—Intake structures for conduits will be constructed behind cofferdam (arrow).

DOWNSTREAM—Main power plant excavation is pushing into side of 310-ft gorge.

Problems

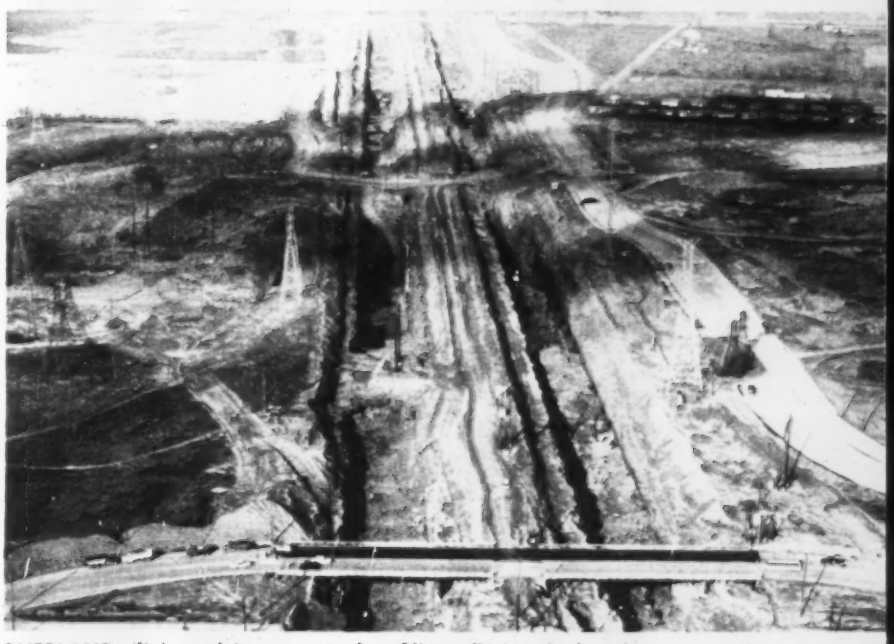
will be carried directly into the rock through the arch abutments.

• **Arches are massive**—Because of the varying heights of fill (up to 80 ft) over the tubes, two arch sections were studied. It was decided to use the heaviest section for the complete length of the conduits. The extra safety and stability of the heavier section will take care of any unforeseen load conditions. Also, the constant section of the structural elements has the advantage of reducing forming expenses.

The arch has a 23-ft radius and its dimensions are massive. It varies in depth from 4.5 ft at the crown to 6 ft at the abutments. Semicircular hinges at the abutments will have a 15-in. radius, crown hinge radius will be 12 in.

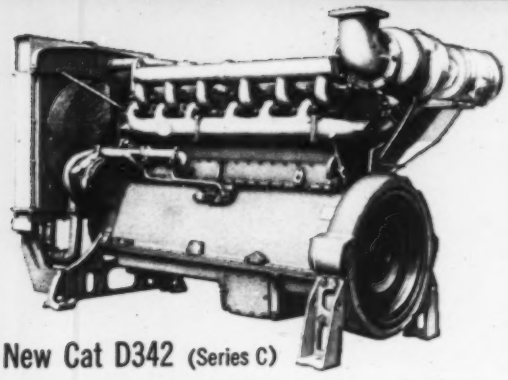
Compressible filler material will be placed in the hinges to allow free rotation and opening and closing of the outside faces of concrete at the hinges.

The sides and bottom slabs, provided to improve the hydraulic gradient, are



OVERLAND—Twin conduits carry water from Niagara River to forebay of pump-generating plant. Conduits run behind the City of Niagara Falls.

engine power
BY CATERPILLAR



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But there's far more to offering this new engine to meet the realistic needs of contractors than just knitting metals into horsepower at the drive shaft.

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Diesel engines have always required sizeable capital investments. This has led to highly competitive pricing. Cat Engine quality standards are never lowered to gain an initial price advantage. Cat owners realize increased performance and profit that far exceed any difference in initial price that might exist between Cat Engines and competitive diesels.

The former Cat D342 Engine has been redesigned, reshaped and improved in *all* of its many parts. These improvements help the contractor produce more with excavators, crushers, batch plants and other machines on the job. And this design progress will continue.

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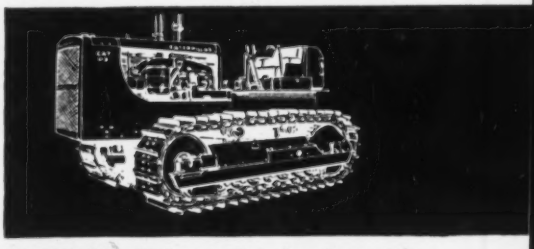
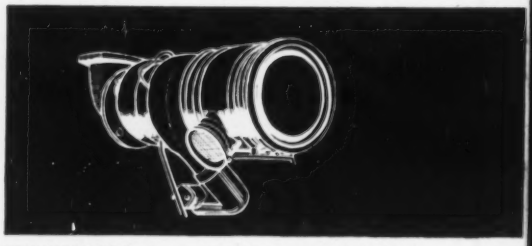


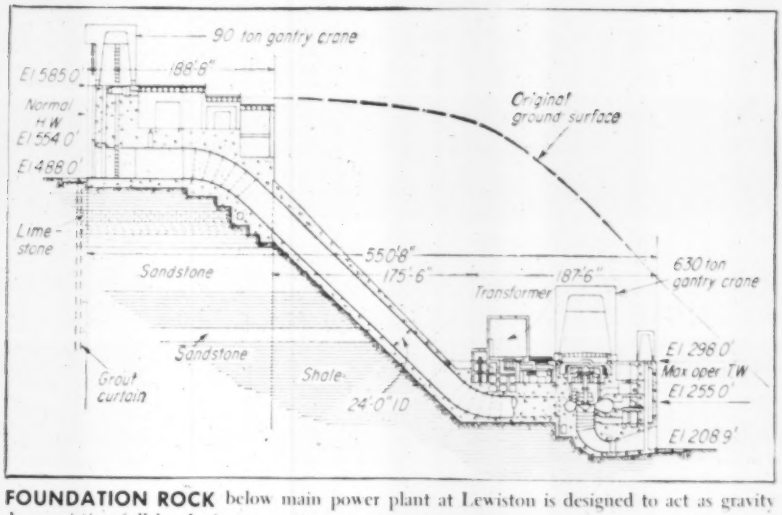
PERFORMANCE. D8 Tractors have long been made the standard for tractors by contractors. The predecessor configurations of the D342 have contributed mightily to this acceptance.

SERVICE. The new D342 (Series C) is backed with 24-hour availability of parts and service. The outstanding unified Cat Dealer organization gives a big plus-benefit to buyers of every Cat Engine.



IMPROVEMENTS. Important advances include: (1) increased HP in all D342 (Series C) configurations; (2) turbocharging produces greater power capacity and fuel economy; (3) a new efficient air cleaner now has 99 plus per cent dust removal.

OTHER QUALITY FEATURES include valve rotators to provide prolonged and uniform valve seating, cast-in iron top ring band for longer piston and ring life, and crankshafts induction hardened and shot peened for greatest toughness and strength.



FOUNDATION ROCK below main power plant at Lewiston is designed to act as gravity dam resisting full head of water acting across grout curtain.

tied to the rock by anchor rods. The anchoring prevents separation when hydraulic pressures develop behind the slabs during tunnel dewatering. It also keeps the slabs tied to the rock if movement occurs.

If squeeze does occur, it is known that the movement largely takes place shortly after excavation. Contractor schedules have been set up to allow 60 days between excavation and concreting for roof arches and 30 days for side wall and bottom slabs to permit movement to take place during the interval.

• **Reservoir size in doubt**—The pumped storage plan has brought strenuous objections from an Indian tribe. A short distance east of the main generating plant at Lewiston the tableland on which the project is situated falls away sharply. The only location available for the necessary reservoir takes in a portion of a Tuscarora Indian Reservation. Court fights and other incidents have stemmed from the Indians' reluctance to sell the land.

The question of the Indian land's exemption from conservation is still undecided. Unless it is resolved quickly construction will proceed on the basis of a smaller reservoir.

The reservoir site is on flat land. Embankments, in some spots up to 40 ft high, will be built around the entire 45,000-ft perimeter of the 2,880-acre reservoir. Usable storage capacity is estimated at 60,000 acre-ft with a drawdown maximum of 25 ft.

Some of the large quantities of overburden and rock from work on other portions of the project will be used to build the embankment. It will have an impervious core and rock fill shells with the core tied to the natural overburden covering the floor of the reservoir.

The rock underlying the site is relatively permeable. To reduce leakage, the present impervious overburden will remain undisturbed and a grout curtain will be provided along the centerline of the embankment.

Dead space in the reservoir below the 25-ft drawdown level will be used as spoil areas to dispose of some of the excess and unsuitable material excavated from other construction sites.

The Tuscarora pump-generating station will be a modified outdoor-type plant, 816 ft long, 241 ft wide and 160 ft high, equipped with 12 pump-turbine units. The turbines are rated at 37,500 hp as pumps and 20,000 kva as generators. Only unusual feature is the extra length of the penstocks of the turbines—lengthened to reduce velocity head losses when used as pump discharge lines.

The mile-long approach channel from the Tuscarora plant to the main plant was originally designed for a 200-ft width. This was changed to 500 ft when the Federal Power Commission required that the covered conduits be extended all the way to the forebay of the Tuscarora plant.

The added width will allow the approach channel to act as surge basin regulating the covered conduits. A maximum surge of 10 ft above Niagara River surface is expected at the conduits when the intakes of the main plant are closed.

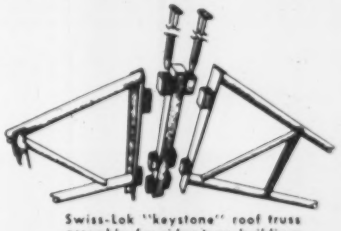
The Lewiston plant is being built into the side of the 300-ft cliff forming one wall of the Niagara gorge, 4 miles downstream from the Falls. It is an outdoor-type plant equipped with thirteen 150,000 kw generating units rated at 167,000 kva each.

Since the river bottom drops sharply, the cofferdam protecting the site has to be placed on land leveled by removing the cliff overburden. This plus room needed for operating construction

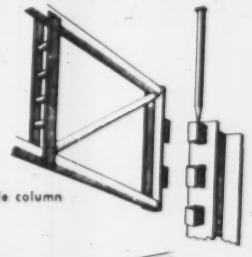
CUT YOUR COSTS with Swiss-Lok Tubular Frames

There's not a rivet heater nor an electric welder nor an acetylene tank in sight on a Swiss-Lok structural job! Nor the high cost, multi-task labor that performs all those field construction operations with conventional structural steel. The only tools required by the normal 5-man crew are two-pound hammers and a wrench for the foundation bolts.

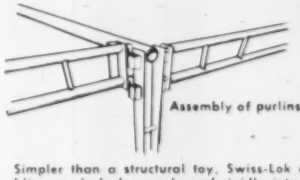
That work is all factory made of new steel pipe, to your building specifications by low cost production-line methods. Brought to the site by trailer truck and spotted at the point of erection, trusses, columns, purlins and girts are ready for crane lifting and locking into place by the tried and proven Swiss-Lok.



Swiss-Lok "keystone" roof truss assembly for ridge-type buildings



Assembly at side column



Assembly of purlins or girts

Simpler than a structural toy, Swiss-Lok assemblies are locked securely and rigidly into place, as indicated by these drawings.

You get ⅓ less steel weight (and ⅓ less freight), but a strength that exceeds A.I.S.C. standards. You get a rigid, self-aligning steel frame that permits use of any type roof and wall construction.

Many other impressive advantages of Swiss-Lok frames are covered in literature. Write for Bulletin-5128.

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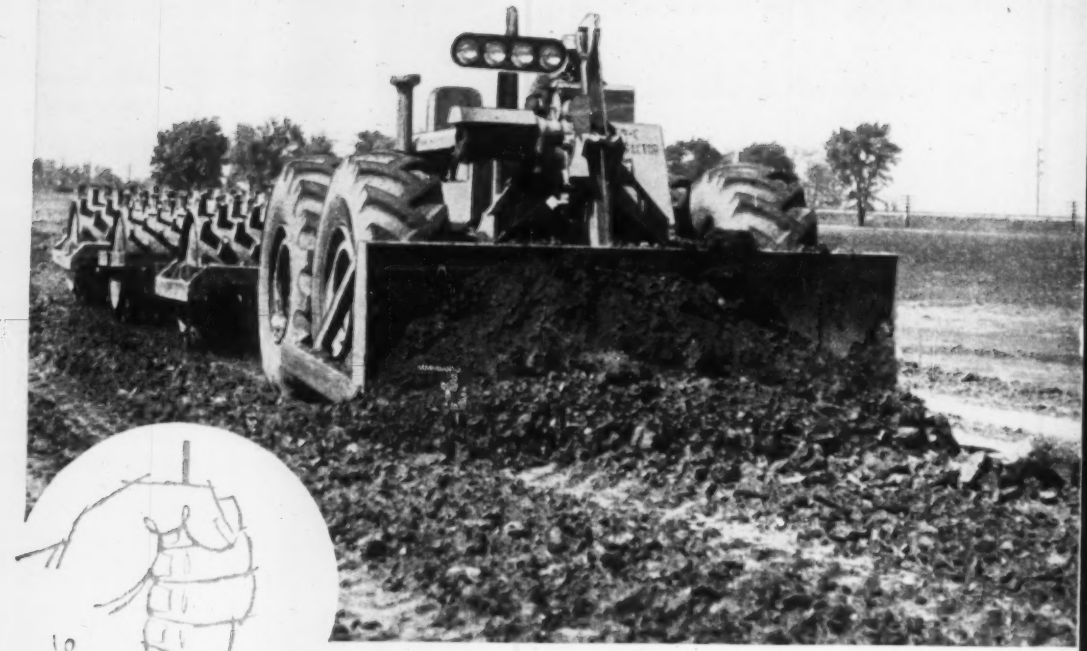
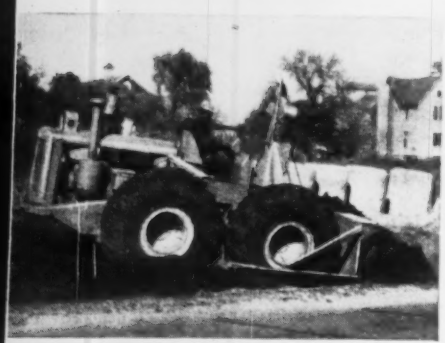
Manufacturers of Swiss-Lok Scaffolding and Shoring



BALANCE your tractor fleet for extra profit...

When you plan dirtmoving contracts, you are usually faced with a wide variety of tractor assignments.

The question is: What kind of tractor — crawler-mounted or rubber-tired — will pay-off best in the work you're handling?



Repairs access road to isolated farm

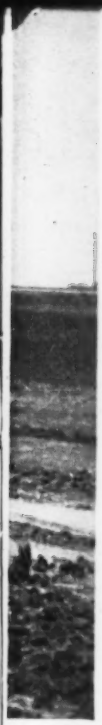
Farmer's access road 5 miles down the pike is washed out. He can't get his pick-up out to the road, can't move his produce to market. Your-Tournatractor is on the job in 20 minutes . . . repairs road in 20 minutes . . . is back on its regular job in another 20 minutes. You've saved money, made friends.

Hires out for plus profits

A property owner near your job wants land leveled for building site, or drainage. You "borrow" Tournatractor from production fleet . . . send it over highways, through city streets to the work site. Whole job takes only a few hours. Tournatractor earns $75 or so extra pay . . . without delaying the main job.

Balances production — cuts moving time

When your production fleet moves, self-propelled scrapers roll over highways to the new job. Tournatractor rolls with 'em. Scrapers can begin work on arrival, if a Tournatractor is used to push-load. (Crawler-pushers are usually latecomers since they must be loaded on flat-beds, hauled to job site, and ramp-unloaded.) When short hauls bunch-up your scrapers in the cut, again drive in Tournatractor. This tractor will quickly balance your pusher operation, until longer hauls get your production fleet back into efficient spacing.



Clears right-of-way for production earthmovers

While your heavy-duty crawlers grub out stumps or break up shale, there's plenty of rough work that a speedy tractor-on-rubber can handle . . . scattered work that will get your production haulers working sooner. Use a Tournatractor to pile logs, stumps, and brush, build and maintain haul roads, doze boulders, clear turn-around areas, connect access roads, cut drainage ditches to keep borrow pits and haul roads dry.

Big, 2-ft wide tires aid compaction

Material on fill is piling up fast. It needs continuous compaction or it will delay scraper cycles. Tournatractor levels high spots with its dozer blade, at the same time it pulls a 35-ton, 6-drum sheepsfoot roller. Tournatractor's 2' wide tires, carrying 20 tons of weight, combine prepacking with heavy 30 to 50-ton follow-up for most effective compaction.

Quickly reconditions mucky haul roads

Your heavily-loaded scrapers cut deep ruts into wet haul roads . . . slow production cycles. Tournatractor, called from an assignment a mile away, can be regrading damaged haul road in 5 minutes. With quick forward and reverse passes, Tournatractor dozes in fill, levels surface, cuts a trench to improve drainage . . . puts production scrapers back on schedule. In fact, it's profitable on most jobs to have this quickly available unit patrol your heavily used haul roads several times a day.

For heavy, short-haul work? For scattered work?

For most heavy, short-haul work . . . for dozing in rock-filled earth . . . and for "stay put" work in limited areas . . . slow-moving crawler-tractors fill the bill, because they have more lugging power at slow speeds.

For work where travel range is important . . . for leveling scattered fill . . . towing "part-time" scrapers . . . cleaning up . . . maintaining haul and access roads . . . push-loading . . . finish-grading . . . and doing dozens of "chores" scattered over a wide work area . . . your best bet is today's improved 210-hp, 17-mph, rubber-tired LeTourneau-Westinghouse Tournatractor®.

Crawlers to "lug" . . . tires to "run"

To handle your work at lowest cost you'll want to team L-W Tournatractors and crawlers in proper balance . . . using crawlers to "lug" and Tournatractors to "run."

Of course, as every project varies, you can't work out an exact mathematical formula between crawlers and rubber tires. Start with rubber-tired tractors where you obviously need most of their speed and maneuverability. Then, extend your rubber-tired percentage as you find it profitable for your operation. Keep in mind, as you plan, the growing importance of mobility in today's bigger, large-area dirtmoving jobs.

Some contractors say a tractor fleet should be evenly balanced . . . half "track," half "rubber." Others find that one Tournatractor does the work of two crawlers on their particular operations, and plan accordingly.

We've pictured here, some typical circumstances where a work-and-run tractor-on-rubber helping on your contracts, will bring you maximum profit.

Cuts emergency drainage ditch

Rain forecast for tonight . . . could easily flood poorly-drained cut in spongy clay . . . could side-line your production fleet for days. In 10 minutes, speedy Tournatractor drives 2 miles . . . soon digs drainage ditch, then smooths cut and haul roads to eliminate water pockets. No production delay today! And, come heavy rains tonight, the dirt will still roll on schedule tomorrow!

CT-1517-DC-2

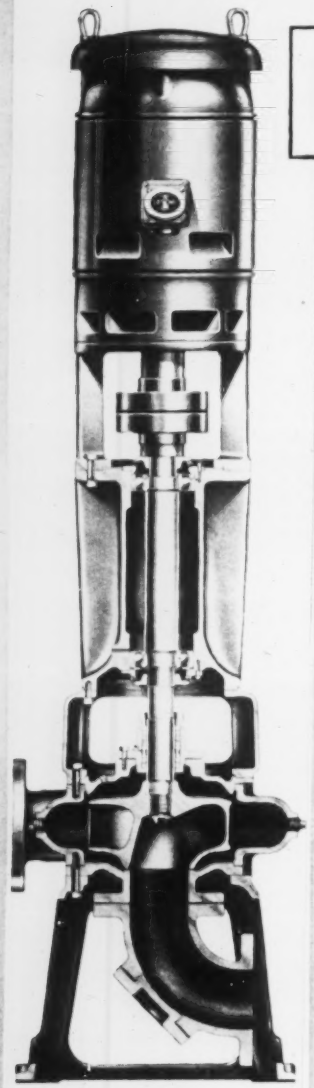
LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For higher pumping efficiency

of solids in suspension!



NEW

Fairbanks-Morse

5440A Non-Clog Pumps

Ideal for pumping unscreened liquids with large solids in suspension

- industrial wastes
- sanitary sewage disposal
- industrial processes

Here is your answer to higher efficiencies wherever you are pumping solids in suspension!

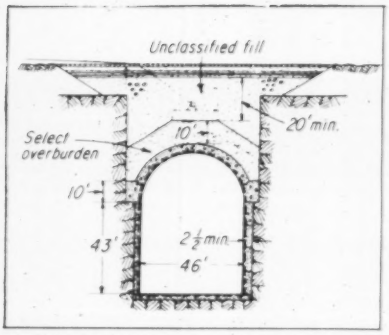
All-new Fairbanks-Morse 5440A Non-Clog Pumps feature quick, easy convertibility between any of the many vertical and horizontal types. Power requirements of the pump are always perfectly matched to the electrical and mechanical components. Precision-machined centering fits assure accurate alignment. Exclusive F-M bladeless impeller design minimizes maintenance by preventing clogging from solids and stringy material. The 5440A is only one of many F-M solids-handling pumps designed to meet a broad range of requirements. For information, write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Ask for new 5440A BULLETIN!

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

ELECTRIC MOTORS • DIESEL, DUAL FUEL AND GAS ENGINES • PUMPS
COMPRESSORS • GENERATORS • MAGNETOS • HOME WATER SYSTEMS



CONDUITS are being constructed by the cut and cover, method.

equipment pushes the base of the 1,100-ft-long plant 500 ft into the cliff. More than 9.7 million cu yd of rock must be removed.

None of the birdcages familiar to powerhouses will be seen over Lewiston. All power leads from the generators will be carried in underground conduits to the transformer yard alongside the approach channel.

• **Rock acts as gravity dam**—A vertical grout curtain will be placed across the length of the plant just ahead of the penstock intakes on top of the cliff. Grout will be placed at depths and in quantities as great as the rock strata will take. Drains will be installed to intercept any possible seepage through the grout curtain. The rock mass under the penstocks and in front of the grout curtain will act as a gravity dam to prevent movement. It is capable of resisting a full head of water acting behind the entire length of the curtain.

The 13 turbines installed at Lewiston are all of the same design. The various manufacturers agreed to bid in accordance with this stipulation. This unusual procedure avoided the usual case of two or three types of turbines varying only in minor details but requiring a lot of extra design, construction and maintenance details.

The designs of the river intakes for the conduits have been subject to extensive model testing. There will be two intakes located about three miles above the Falls.

The testing has been done in the hydraulic laboratory of the Ontario Hydro-Electric Power Commission. That laboratory already had a 1:250 scale model of the Niagara River available after testing the intake designs for the Adam Beck Station.

Head losses in the intakes have been reduced from 4 ft to 2½ ft through design modifications resulting from the tests. Since every foot of head is worth an estimated $5 million in power generation, additional testing is valuable.

While some refinements are necessary, the basic outlines of the intakes

How D. W. Winkelman
HANDLED "TOUGH ONE"
on Richmond-Petersburg Turnpike

Restricted, hilly work areas were no problem when 210 hp C Tournapulls helped build new Richmond-Petersburg Turnpike in Virginia. On cycles that included steep climbs, restricted areas, fast-moving "C's" completed 1.8-mile trips in 11.2 minutes. Contractor D. W. Winkelman Co. used 6 of its C 'Pulls, a "D", and a Tournatractor.

Virginia's Richmond-Petersburg Turnpike, only 34.7 miles long, presents just about every highway construction problem known. Half its mileage and 8 of its 17 interchanges are in crowded city areas. It involves 95 crossings and 19 structures, including a 4,220'-long bridge. And before the road is opened, 250,000' of pipe will have been laid, 300,000' of concrete piles driven, and 11,000,000 cu. yds. of earth moved.

Travel to job at 20 mph average

Handling one of the 17 separate R-P Turnpike contracts is nationally-known D. W. Winkelman Co., working through its Carolina Company. The firm is building a .9-mi. section of the 4-lane highway, near the center of Richmond. To move the 722,000 cu. yds. of earth involved, Winkelman used 6 of its C Tournapulls®, a D 'Pull*, Tournatractor®, 2 sheepsfoot rollers, 2 competitive scrapers, and 2 crawler tractors. The Tournapulls were driven to the job site from Greensboro, N.C., headquarters of the company, traveling the 200 miles in just 10 hours.

Like most contracts on the Turnpike, this one was tough. The general area through which the road passes is extremely hilly, with grades varying as much as 80 feet in 500. To make matters worse, the right-of-way is hemmed in by railroad tracks, major public buildings, and other "immovable" obstacles, limiting the areas that could be used as haul routes. Net result was that on some sections of the work, the haul roads were so steep that loaded scrapers had to be pushed uphill.

1.8-mile cycles in 11.2 minutes

Despite these difficulties, Winkelman's machines racked up excellent cycle times. One team of scrapers, assigned to the 60' cut and 60' fill work on the highway itself, averaged a 1.8-mile long-haul-spread trip every 11.2 minutes. Team #2, cutting under viaduct trusses at one end of the job (so the next contractor could come to grade) averaged an .8-mile trip every 9.1 min. The ruggedly-built Tournapulls took this work in stride throughout weeks of tough, uphill work.

High production, low upkeep

On rugged assignments like this Turnpike, Tournapulls keep production high, maintenance low. 210 hp, driving wide, low-pressure tires through a completely non-friction power train, licks tough hills, other difficult conditions. And their low, wide Fullpak® bowls speed loading.

Electric controls cut costs, boost production. Simplest of all power systems to maintain, Tournapull's "electrics" control bowl action, tailgate motion, apron lift, and steer.

Before *your* next "tough one", look into the LeTourneau-Westinghouse line of fast, rubber-tired earthmoving equipment. Your nearby distributor will be happy to give you all the facts and figures.

Low, wide Fullpak scraper bowl on Tournapull scoops up big payloads fast. Note straight-line action from pusher to cutting blade.

*Trademark CP-1711-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Protected

at the first breath of danger

by the unique Rate-Compensation action of Fenwal DETECT-A-FIRE® Units

During those critical moments while temperatures are building up to the ignition point, *only a detector that can actually anticipate fire danger can provide positive protection!*

And only the DETECT-A-FIRE Unit with rate compensation is specifically engineered to do just that!

The DETECT-A-FIRE Unit's unique design eliminates the sluggish "heating through" required by fixed temperature elements . . . the "hit-or-miss" protection afforded by fixed rate-of-rise devices. No matter how slow or fast surrounding air temperature rises, its heat-sensitive outer shell *responds the instant it reaches a pre-set danger point!*

Available in decorator colors to match modern interiors. Can be set for temperatures up to 725° . . . reset themselves . . . require no replacements. Wide spacing makes installation economical . . . *rugged construction assures decades of trouble-free protection.*

For full details on the complete protection only rate compensation can provide, send for Bulletin MC-108. Write Fenwal Incorporated, 282 Pleasant St., Ashland, Massachusetts.

Fast-acting Fenwal DETECT-A-FIRE Units located in schools provide positive protection . . . always ready to respond instantly *at the selected protection level.*

ANOTHER EXAMPLE OF HOW **Fenwal** CONTROLS TEMPERATURE . . . PRECISELY

. . . Niagara project

have been established. There will be two structures—700-ft-long submerged tubes with entry ports in the vertical face. The ports will be 11 ft 8 in. wide and average 19 ft in height, with the sill located about 40 ft below normal river level. Angled vanes added to the ports will reduce entrance losses.

A 2,000-ft-long, rockfill dike will extend from the tip of Buckhorn Island in the middle of the river towards the intakes. The dikes will angle river flow into the intakes. A portion of the river bottom will be excavated to slope down and terminate in an approach channel about 45 ft deep directly in front of the intakes.

• **Ice is a problem**—Keeping ice out of the intakes posed another design problem. To keep the ports clear, a channel 7,000 ft long by 500 ft wide will be formed in the river bed downstream from the intakes.

Model testing of this design, using paraffin to simulate ice action, showed two separate currents at the intake face. At the surface, the current was downstream, carrying the floating ice past the intakes. But below the surface, at port level, a second current was running crosswise into the intake ports.

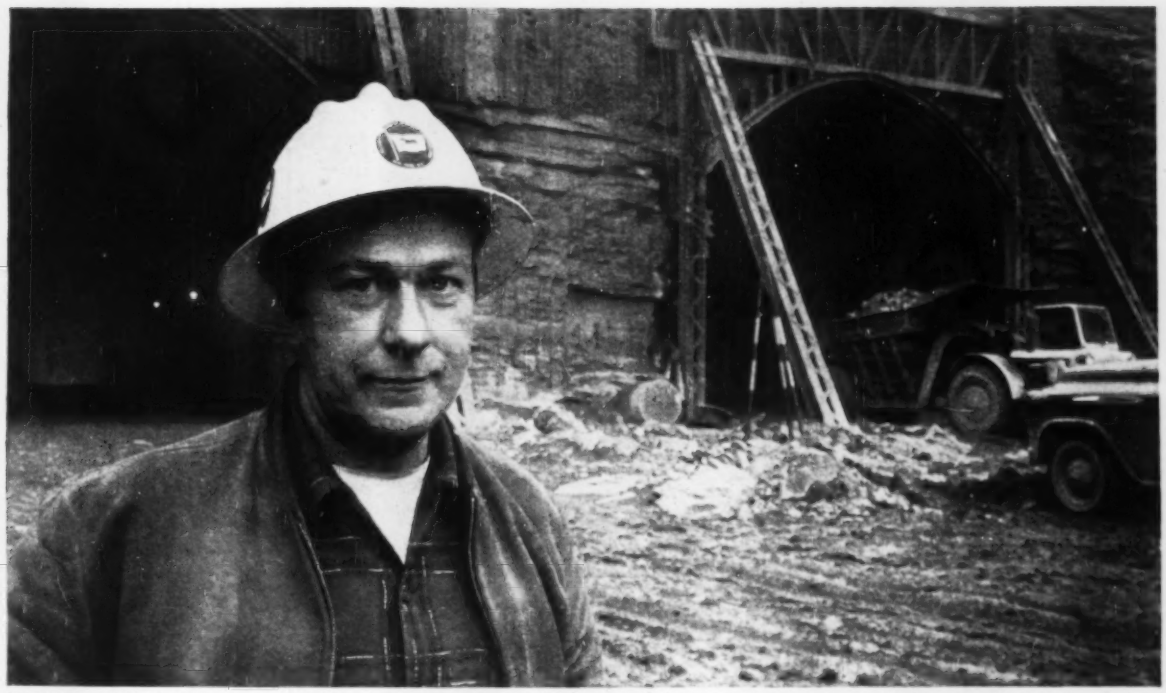
Construction of the intakes will require a sheetpile cofferdam built out into the river. The complete perimeter of the site, including the land side, will be grouted to an average depth of 40 ft to prevent possible water seepage into the excavation from the land side through very porous underlying strata.

Rock excavated from the river and material from other portions of the project will be used along the river for a parkway system passing through the city. The system may incorporate portions of the haul road. Haul road grades and bridges are therefore constructed to parkway design standards.

Rock not used in the embankment or along the parkway will be used for concrete aggregate production. What the Power Authority does not use on its own job will be sold in the area.

The Niagara project is being designed by the engineering firm of Uhl, Hall & Rich, a subsidiary of Chas. T. Main, Inc., Boston. About 3,000 of an estimated 7,000 drawings required have been completed. Uhl, Hall & Rich has a field force of about 260 men on the job at Niagara and 200 in the home office working on the design.

The project is under the direction of the Power Authority of the State of New York. William S. Chapin is general manager and chief engineer of the authority. J. Burch McMorran was chief engineer until his recent appointment as Superintendant of Public Works of the State of New York.

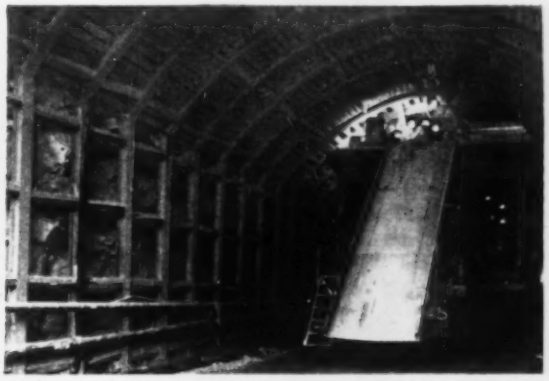


"AHEAD OF SCHEDULE," says Jim Sullivan, Tunnel Superintendent for Merritt-Chapman & Scott Corporation, contractors for the twin $17 million tunnels under Mt. Washington which will connect Pittsburgh's Golden Triangle to Penn-Lincoln Parkway. Improvements in steel posts, arch ribs, and channel lagging supplied by COMMERCIAL SHEARING & STAMPING increased tunnel support strength, made for safe, fast installation, and helped the contractor hole through twin .7 mile long tunnels ahead of schedule.

New design tops Ft. Pitt tunneling schedule

RAPID RATE OF PROGRESS—After shooting, as fast as muck in the tubes was removed, steel posts and roof sets were installed. Posts were 31 lb. 8" H-beams fitted with foot and butt plates accurately punched for quick field bolting. Roof ribs were pre-bent 40 lb. 8" H-beams. Precise fabrication of the 3800 tons of supports plus on-time delivery by COMMERCIAL were key factors in maintaining desired rate of progress.

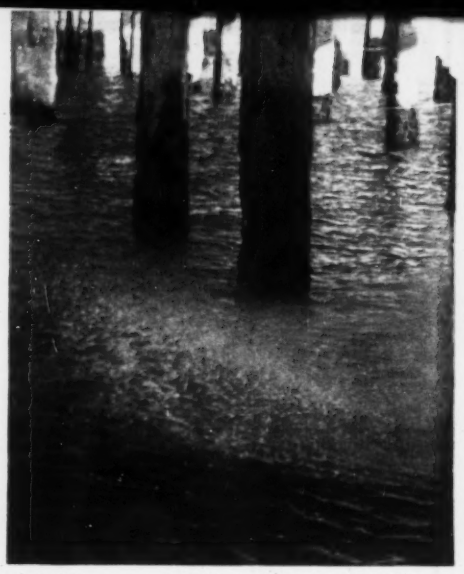
With over 30 years of experience in the design of supports for soft ground and rock excavations, COMMERCIAL's engineering staff is ready to offer you expert assistance with your particular shaft, surface or sub-surface tunnel problem. Write to Commercial Shearing & Stamping Company, Dept. E-6 Youngstown 1, Ohio.



NEW IDEAS IN SUPPORT DESIGN—Drilling was done from a 37 ton truck-mounted jumbo which alternated in tunnel headings. Prewelded, clip-angle haunch blocks helped speed erection and made blocking easier. Posts, rib sets, lagging and angle spacers were delivered on the job completely fabricated, ready for fast field erection. Workmen on the jumbo quickly assembled the two-piece arch ribs, bolting them in place on 4' centers. Steel channel lagging was clipped to the outside flange of the arch ribs to provide between-rib roof support. Since all holes for field bolting were pre-matched, the entire support system was rapidly secured with speed-up, quick-acting bolts.

COMMERCIAL
shearing & stamping

Old Concrete Piles can be repaired quickly and economically without forms.



First, they are sandblasted clean. A high- is so wave resistant . . .

Old Wood Piles suffering tidal range damage from rot, insects can be rebuilt (arrow) by . . .

. . . handpacking 6,000 psi Rods driven into square cut

Here's a New Way to Make Old

A wave surged against the pile and passed by. Another wave hit, and another. All the while workmen aimed a fine spray of mortar at the pile—always keeping the spray right at the varying water line.

Though scoured by every succeeding wave, each thin layer of mortar stuck, and between impacts of the ocean water, the pile increased in size.

It's hard to believe, but that's what happened during the recent repair of badly deteriorated concrete piles on the 1,000-ft-long, $2-million Long Branch (N. J.) fishing pier.

Built in 1912 to handle excursion steamers from New York City, the pier had lost part of its outshore end to the force of two hurricanes. The piles were badly deteriorated beneath the remaining deck.

The unusual procedures used in restoring these piles to their original size and strength are shown in the pictures at the top.

These methods depend on the successful performance of a grout fortified with an additive called Speed-Crete, developed by Underwater Problem Engineering Corp., Ft. Lauderdale, Fla.

When the additive is added to portland cement and sand, the result is a quick-setting grout that can be applied to wood or concrete piles, either pneumatically or by hand. On the pneumatic application, restoration below the low water line is done by hand-packing.

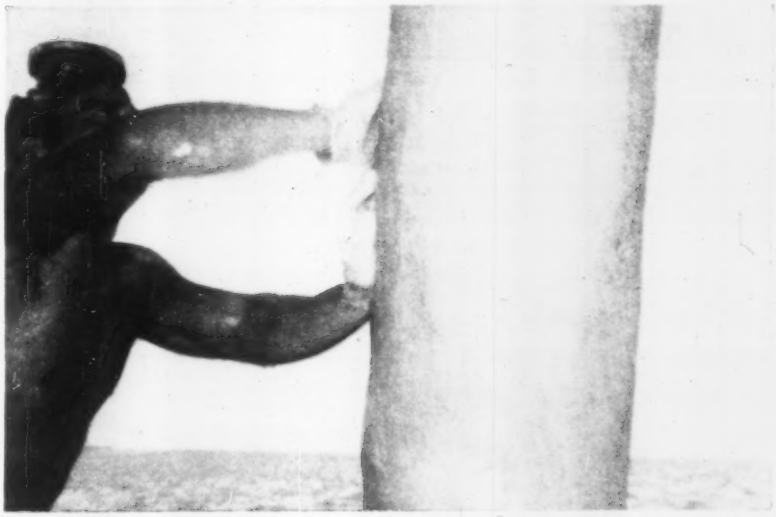
This grout can be made to stay in place without forms of any kind, even in the face of heavy wave action. Engineers who have approved its use say the simplicity of application permits pile repair for much less than more common methods.

Tests performed by a Florida laboratory for the Department of Engineering of the City of Miami indicate that at 28 days, the grout has an ultimate compressive strength in excess of 6,000 psi. Three 4-in. cubes tested broke at 6,450 psi, 7,125 psi and 6,625 psi respectively.

strength grout, with a special additive,

. . . it can be sprayed on until repair is complete and the pile is restored to its original size and strength.

grout after removing decayed wood. ends stabilize the grout.



More handpacking builds up the grout, which remains plastic for four hours, apparently unaffected by waves.

Pier Piles Good as New

Other tests made by the same laboratory and by another in New Jersey indicate that the material, after 24 hours, has an ultimate compressive strength in excess of 2,000 psi. After 48 hours its strength exceeds 2,500 psi. In three to five days it can top 3,000 psi.

Before the Long Branch Pier job, the material had been used to rebuild wood piles supporting two structures in the Miami area. One is the over-the-water Tradewinds Restaurant at the Miami City Yacht Basin. The other is the East Bridge of the heavily traveled Broad Causeway in the town of Bay Harbor Island, just north of Miami Beach.

On both these structures, the supporting creosoted piles had been badly damaged at the tidal range by Limnoria and Toredo wood borers.

(A survey of the East Bridge made last year by the University of Miami Marine Laboratories at the direction of New York City consulting engineers Howard, Needles, Tammen & Bergendoff showed that many of the supporting piles had lost from 50 to 80 % of their original strength because of tidal-range damage. Damage below the low-water line accounted for only a 2 to 5% reduction.)

To prevent any further decrease in the stability of the bridge during the cleaning and hand-packing operation, only one badly damaged pile per bent was repaired at one time. In all, 43 piles were completely restored and 45 slightly damaged piles were coated with grout above and below water to prevent further borer damage. The work was done with no disruption of traffic.

Representatives of the Miami engineering department and the consulting engineers have expressed approval of the material on the basis of a year's service, although they don't want to predict its long-range effectiveness.

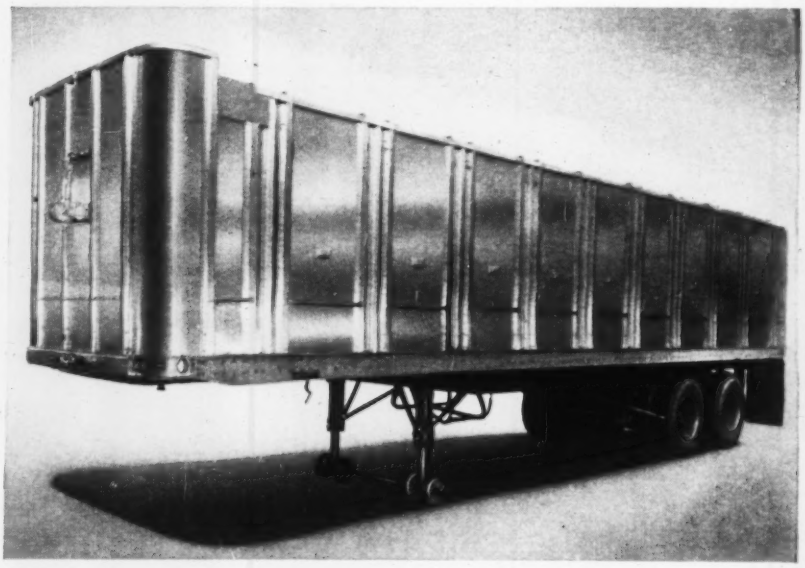
The developer has applied for patents on the additive and plans to license its use.

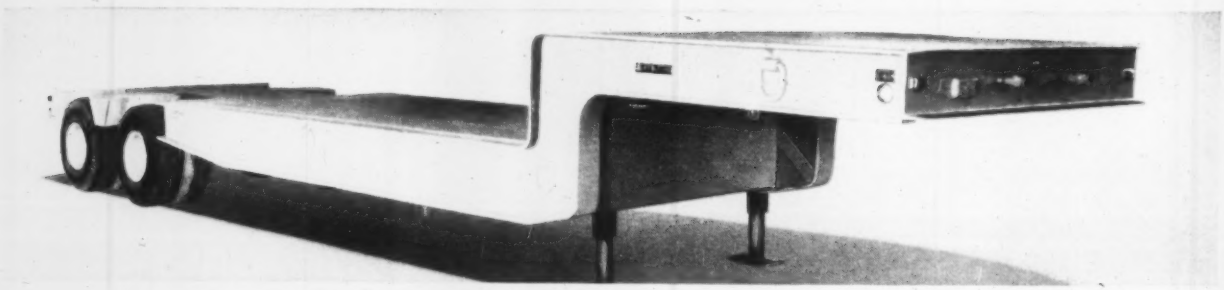
NEWEST, BIGGEST TRAILER

Every Kind Of Construction Trailer Is Here In

NEW STEEL OR ALUMINUM WORKHORSE RACK PLATFORMS

For Profitable Double Duty . . . These rugged, lightweight Fruehaufs are rough and ready for service as flatbeds hauling machinery, metal plate, and heavy installations or as stake and rack units safely moving damageable building materials. Both units are built with deep, rugged, steel main beams, front and rear cross members, corner castings, and bumpers. Both feature an 80" bolted front end. Options include: choice of steel or aluminum for outside rails, cross members, racks, and tarp bows . . . hardwood or aluminum floors . . . racks 48" wide x 60" high or 48" x 72" . . . tie rings in the floor . . . stowage area at front for bows . . . all popular lengths . . . and single or tandem underconstruction. Racks are interlocking, with sturdy stake ends and convenient lifting bars. They can be removed separately. Lift out doors are hinged, and swing flush against sidewalls.

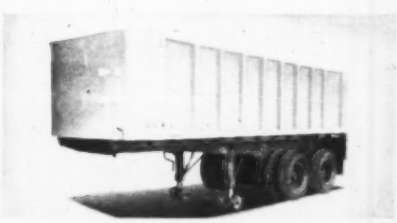




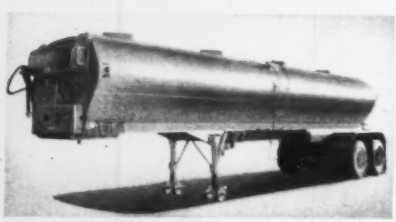
MORE HIGH CAPACITY UNITS IN FRUEHAUF'S RUGGED ROADBUILDER'S LINE

Lightweight Multi-Purpose Platforms

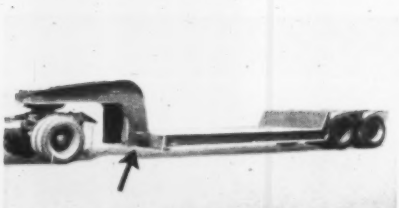
Steel and Aluminum Asphalt Tanks



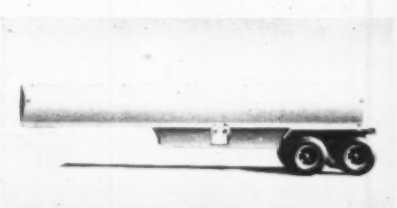
Fabricated I-Beam Dump Trailers



Screw-Type Cement Tanks and Blow Units



Removable Gooseneck Carryalls

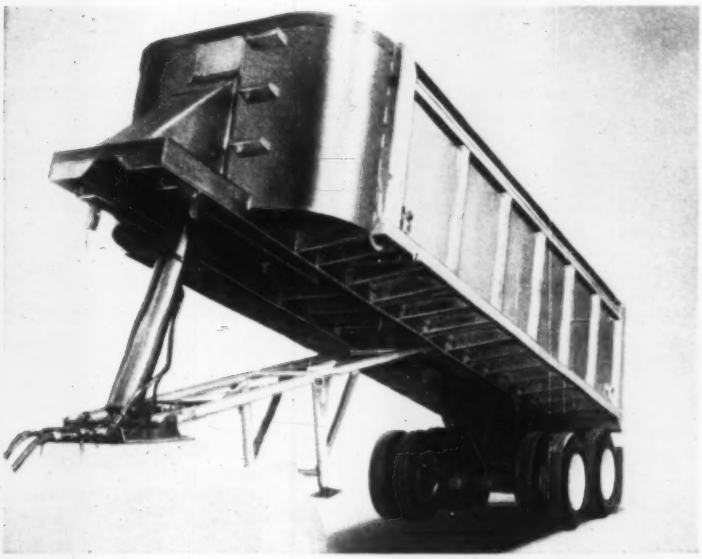


Hopper-Type Dump Trailers

LINEUP FOR ROADBUILDERS

Fruehauf's New, '59 Line Of Higher Capacity Units!

NEW ALL-WELDED ALUMINUM FRAMELESS DUMPS



For Profitable Extra Payload . . . These advanced, lightweight units provide lower tare weight and thus vastly increased payload and profits for the operator. The body is of rugged, boxed construction with grid-type understructure. Stability is outstanding. The efficient dumping system features 8" diameter telescopic hoist, 195" power stroke, automatic by-pass valve, twin line hydraulic system, and 25 gallon pump.

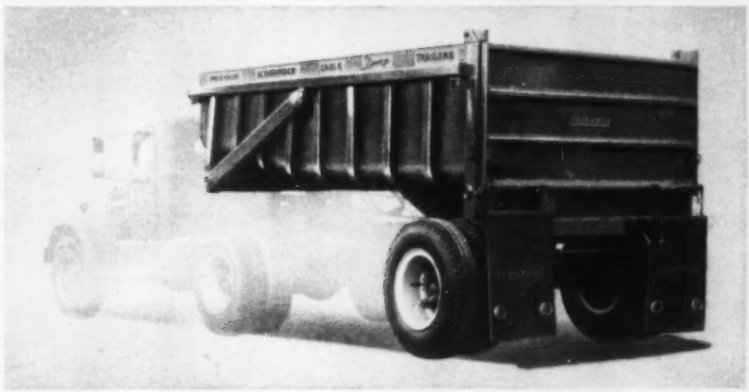
• • •

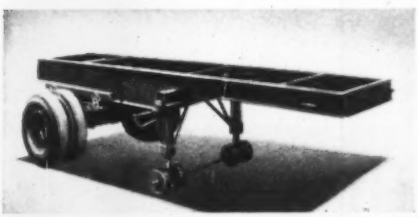
NEW SINGLE AXLE CABLE DUMPS

For Low-Cost Hauling . . . These new Fruehauf-Schonrock single axle units are up to 1000 pounds lighter and considerably less in cost than previous models. There is a 25% increase in dumping speed and 22% reduction in line pull. The heavy center frame is eliminated—the body shell carries the load. Unique wrap-around girdles provide strength and rigidity. Widespread arms assure maximum stability. The cable dumping mechanism is simple and inexpensive to maintain. Single axle unit shown has 10 cubic yard water level capacity, automatic tail gate. Tandems in all capacities are also available.

NEW, LOWER-PRICED 35-TON CARRYALLS

Lightweight And Tough . . . The strength of this new machinery unit is built into 2 beams rather than 4. There is a shorter gooseneck than usual, yet the same turning clearance radius from the king pin because the main frame members have been moved to the outside of the Trailer. The heavier outside frame provides greater strength for side-loading operations. 96" of floored loading space ahead of the drop provides room for accessory loads. Options include side outriggers, side loading ramp brackets, and others. Carryalls available in capacities to 75 tons.





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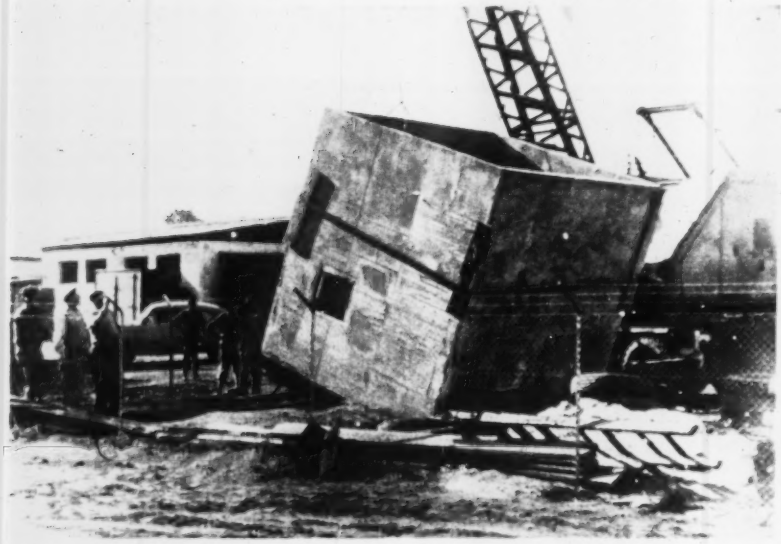
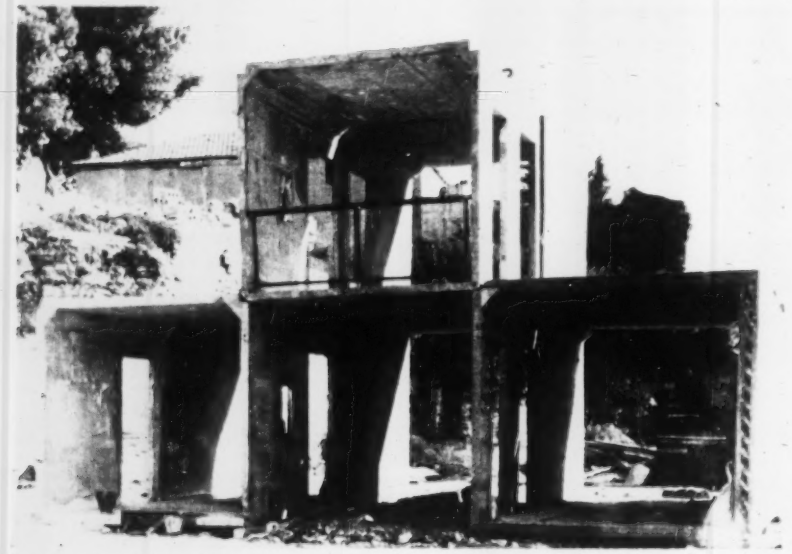
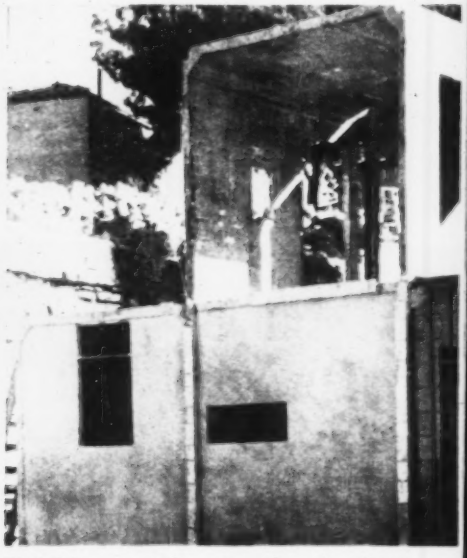


Concrete block is precast on end, then . . .

Crane picks it up and transports



Set on its side, the block is joined to others and . . .



Finishing touches produce a four-

How They Build With Blocks in

An acute shortage of housing, building materials in short supply and a lack of skilled labor—these are common shortcomings in less industrialized areas of the world.

To cope with these problems, an Israeli contractor has come up with a novel construction technique—the casting of a room at a time as a building block.

The system is simple and requires a minimum of skilled labor and scarce materials. It is somewhat reminiscent of a method for precasting whole houses used in Puerto Rico. (ENR Nov. 24, 1955, p 61.)

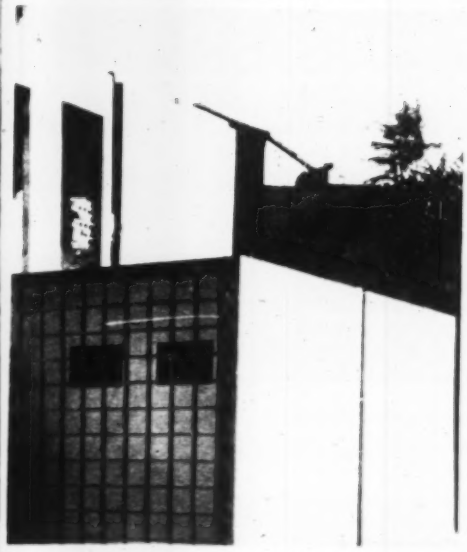
Hollow concrete cubes, 10 ft or more on a side, are cast in steel forms on the ground. When strong enough, each block is tilted over, picked up by its lifting loops and put into place with the aid of a crane. The block forms a room, complete with ceiling, floor and two walls.

Several of these units can be assembled in a variety of ways to form a complete house. They can be placed one on top of another or alongside one another; they can be made to form "eyebrows" (overhanging roofs) or balconies.

Projecting reinforcing rods concreted into each unit can be used as ties between blocks. The weight of each cube provides a further anchorage action.

The walls require no plaster. Floors can be polished to a high finish. Elec-

it to building site.



room house

Israel

tric wiring is inserted, and cavities for insulation are formed before casting. Windows and doors are made by placing wood frames in place, between the inside and outside of the metal forms.

The concrete blocks can be anchored to a foundation, or they can rest on blocks for buildings of less than three stories. Houses of blocks are especially suitable for temporary structures, since they can be easily dismantled and reused.

(Israel needs temporary buildings to take care of its thousands of immigrants until they can be relocated in permanent quarters.)

Metal forms for the blocks are collapsible. The outside form is opened with levers; the inside form pulls up. Forms can be reused.

Only a few of these structures have been put up in Israel so far. But there are plans for buildings up to three stories high. Simon Diskin Ltd., Jerusalem, Israeli engineers and contractors, designed the forms and developed the building method.

Cuban Highway Projects To Go On After Shakeup

Cuba will resume work on its highway construction projects and other public works jobs after shakeups in the government agencies involved.

The Ministry of Public Works is expected to reopen operations soon on: the $22-million Cardenas North Route Highway; the $6-million Malecon extension, in Havana, to the Almendares River tunnel; the $7.2-million Almendares River tunnel, and the $11-million extension of the Central Highway to the Havana Bay tunnel on the eastern side of the bay.

Banco de Desarrollo Economic y Social (BANDES), a Batista agency in charge of many major construction projects, was accused by Fidel Castro of being a major source of graft under the old administration. The new regime is expected to abolish the department.

Some of the BANDES projects will go on, but under a different organization and financing. They are: the $11-million Varadero Highway; the $12-million highway between Mariel and Santa Fe; the $18 million highway from Mariel to Bahia Honda, and the $10-million rehabilitation of Consolidated Railroads in eastern Cuba.

Work on other BANDES projects may be either abandoned or subjected to long delays. These jobs are: the $22-million Varadero drainage improvement program; the $3-million Santa Lucia port dredging program; the $16-million industrial city at Matanzas; the $3.5-million fishing terminal in Havana Bay, and the $20-million electric plant in the East Havana development area.

The Cuban Electric Co. $20-25 million program for 1959 will be maintained and possibly expanded "as soon as the situation is clarified," said a company official. The firm's two largest projects, a $25-million power plant in Ragla, a suburb of Havana, and a $12-million steam electric station in Havana proper, are on the verge of completion.

HYDRAULIC ENERGY DISSIPATORS

Valuable guidance on functions, uses, and kinds of energy dissipators; principles of open channel flow and hydraulic jump; design procedures for stilling basins, valves and gates, bucket-type energy dissipators, etc., plus hydraulic data and information on how to prevent erosion below existing dams. By *E. A. Elevatorski*, U. of Arizona. 228 pp., 173 illus., $10.00

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A practical manual by 25 authorities on the *how* and *why* details of design and construction. 29 sections cover all phases of construction—from selecting an architect to insurance and bonds; on all kinds of buildings—from houses to office buildings and factories. Data on materials, services, specifications, bids, etc. Edited by *F. S. Merritt*, Senior Editor, *Engineering News-Record*. 851 pp., 428 illus., 183 tables. $15.00

PUMP OPERATION AND MAINTENANCE

To help you operate pumping installations efficiently and economically, this handy manual covers every major class and type of pump in use in industrial, municipal, marine, central station, and similar installations. It gives you complete, specific, step-by-step instructions you need for installing, starting up, routine operation, periodic maintenance, and major overhauling. Photos, drawings, and illustrative examples make each procedure that much clearer. By *Tyler G. Hicks*, Mech. Engr., formerly Assoc. Ed., *Power*. 310 pp., 383 illus., $9.00.

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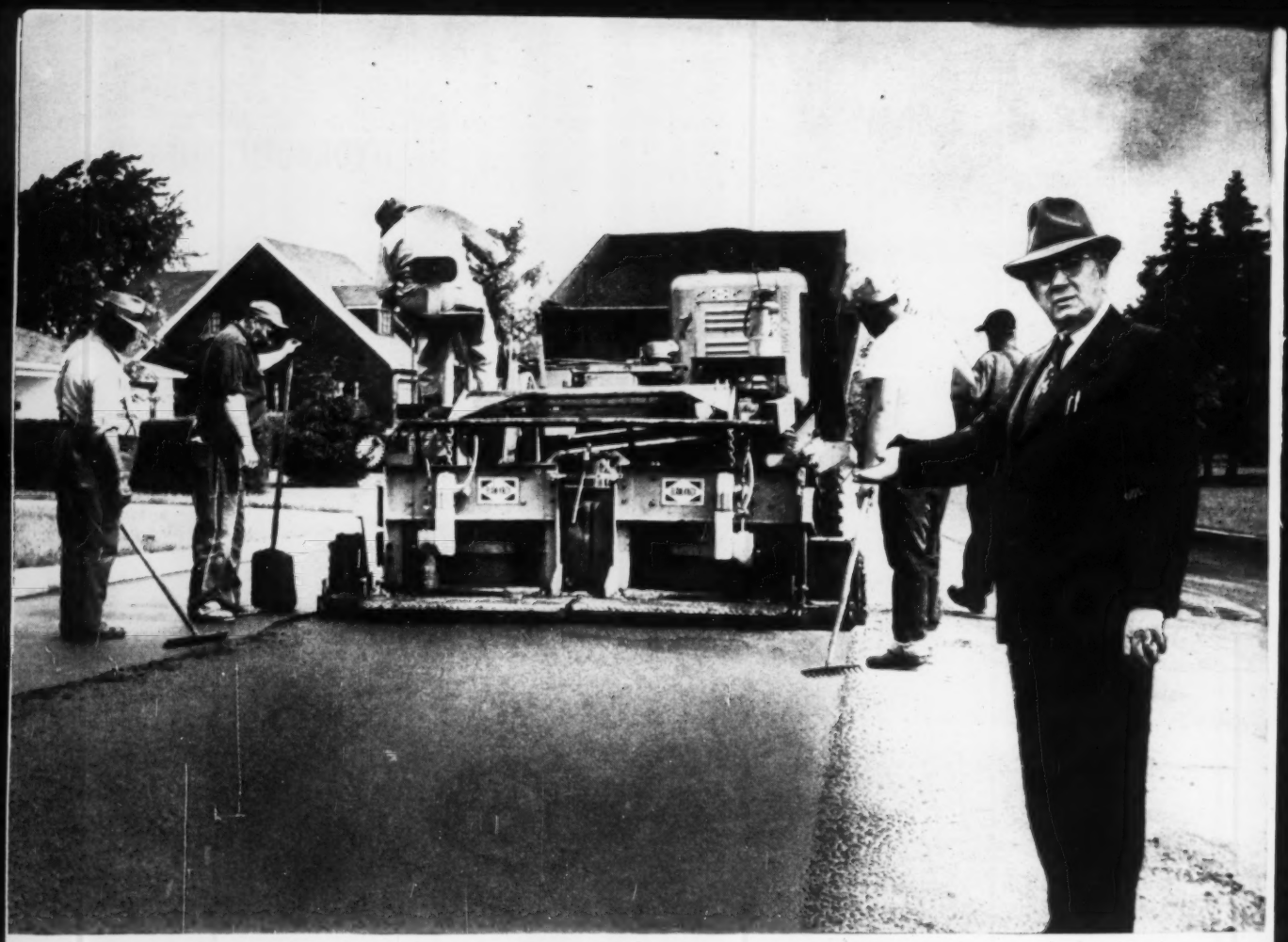

Mr. F. Theodore Jenzen watches the PF-45 lay new surface on Amherst's 30-year-old streets.

"This is exactly what we needed to tackle our five-year, 100-mile resurfacing program"

"The Blaw-Knox Black Top Paver will go anywhere under its own power, follow the crown of the road for good drainage and give a smooth surface with depressions and potholes eliminated," says F. Theodore Jenzen, Superintendent of Highways of the Town of Amherst, New York.

"In addition to saving purchasing and maintenance funds, we have a machine with greater maneuverability and fast width adjustments," Mr. Jenzen added. "The Blaw-Knox paver made a very economical and practical buy. On the average it will empty an eight-ton truck in five or six minutes.

"In our growing town, contractors are laying out and constructing an additional 10 to 12 miles of streets per year. No doubt we'll have to replace some of that mileage in the future. The PF-45 is ideal for this type of work, and there's no question that the machine will do the job," he concluded.

Big paver features and top performance have made the Blaw-Knox PF-45 a favorite with highway departments and contractors all over America. Why not check into its advantages with your Blaw-Knox distributor? Or, write for a report based on Superintendent Jenzen's experience.

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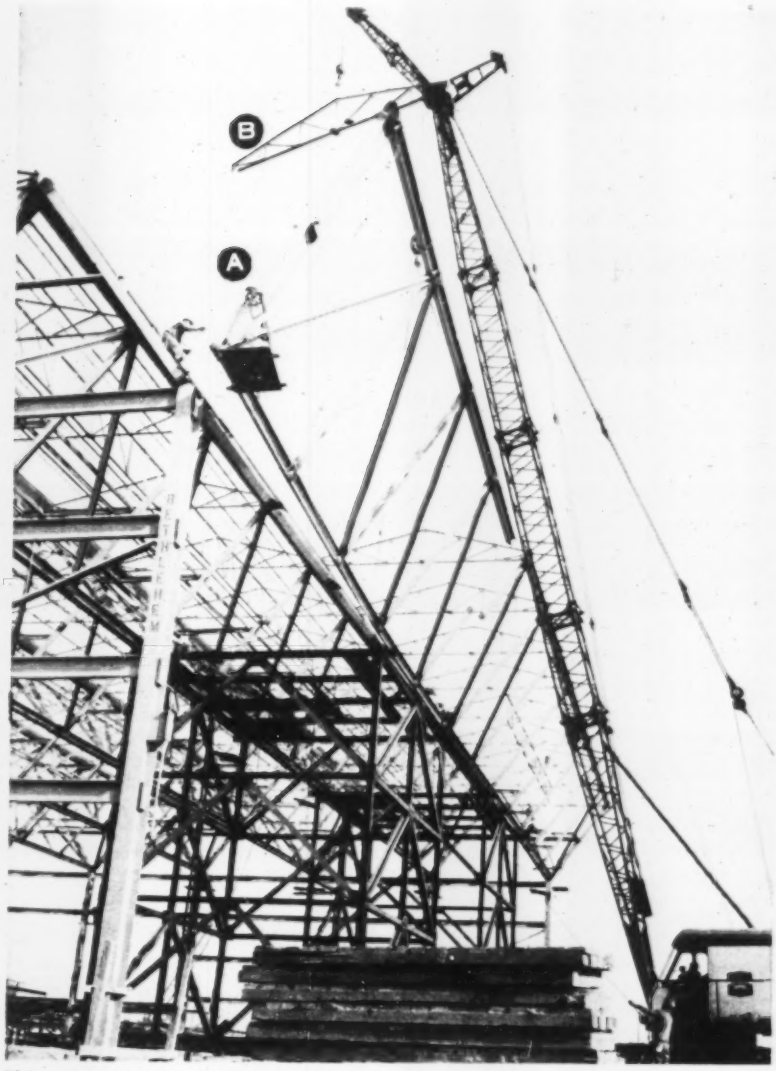

This crane is doing double duty on . . .

Long, Tall Trusses in Texas

The last roof truss now is in place at the State Fair Livestock Coliseum in Dallas. The $1.8 million structure has a roof designed with a system of self-bracing, inclined steel trusses.

The crane did two jobs at once. It held the five-panel truss section (A) on an incline, while steel workers pinned the bottom connections. Then, still holding the section with the main boom, the crane operator lowered the triangular roof truss (B) from the jib boom so the crew could tie the top of the main truss to the next bay of framing.

Steel crews erected the trusses by thirds on the permanent end columns and two temporary intermedite steel towers. The completed trusses are 24 x 240 ft and weight 33 tons each.

For arena shows, seating capacity will be 7,100. Additional seats for boxing and similar events will increase the capacity to 11,000.

The building is designed to be air conditioned at a later date. Ceiling construction consists of absorptive acoustical material on expanded metal lath. Completion is to be in October.

Architect for the job is Harper & Kemp. Chappell & Brenneke is the structural engineer. Wohlfeld Construction Co. is the general contractor. All are from Dallas. Bethlehem Steel Co. fabricated and erected the steel frame.

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British Theodolite available in America

An Optical Micrometer Theodolite, from Cooke, Troughton & Simms Ltd., Britain's oldest maker of surveying instruments, has been introduced in the United States.

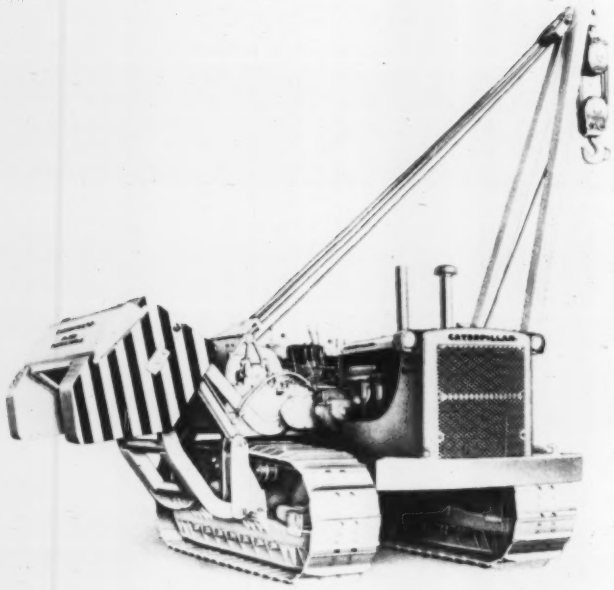
The 9-lb. Model V308 can be read directly to 20 sec. of arc and by estimation to 5 sec. The instrument features brilliance of field of its circle-reading microscope, high magnification of the graduation system and easy reading. The telescope is of the internal-focusing type with a spiral focusing eyepiece.

The V308, complete with spirit levels, optical plummet, centering device and either telescopic or non-telescopic tripod, is packed in a lightweight case.

V308 is a companion to the famed Tavistock Theodolite. Write for information on both.

PRECISION INSTRUMENTS INC.
1900 FIFTH AVE., TROY, NEW YORK

D8 Cat's Bigger . . .



. . . Pipelayer More Powerful

Caterpillar Tractor Co. is producing a bigger and more powerful model of two of its regular line machines—the D8 tractor and the 583 pipelayer. And increases in size and power are but two of several improvements claimed by the manufacturer for its two new "Series H" machines. Other changes are reported to increase speed, simplify operation and reduce maintenance.

In the Series H, the 583 pipelayer has a weight of 83,840 lb, compared to 78,500 for the Series E machine. And it has a flywheel horsepower of 225, compared to 191. The lifting capacity with a 4-ft overhang has been increased to 137,000 lb from 130,000 lb. The top travel speed has been upped to 6.4 mph.

The power increase in the new machine is due principally to the inclusion on the engine of a turbocharger—an exhaust driven turbine that forces air into the cylinders to increase combustion efficiency.

Among the other features on the Series H 583 pipelayer: dry type air filter that improves filtration and reduces service time; reduction in the number of lube-oil filters; pressure lubrication system for the entire power train including the transmission, bevel gears and steering clutches.

The steering clutches are hydraulically operated. This saves work for the operator and eliminates the need for adjustments.

In a modification of the final drive, the 583 now uses double reduction gears to deliver power to the drive sprockets. The resulting reduction is three times that of the Series E machines, and it increases the effective engine horsepower while reducing the strain on the power train, steering clutches and brakes.

In the undercarriage the inclusion of "Lifetime" lubricated rollers and idlers represent another improvement. The units are lubricated during the factory assembly and need no further lubrication until they are replaced.

Other changes have been made in the track assembly. Pins and bushings have been increased in diameter and the standard track shoe width has been increased to 28 in. with a 30-in. shoe optional.

For operator efficiency and comfort, visibility has been improved by aligning the air cleaner and exhaust stacks and by narrowing the dash. In-seat starting is now possible and the operating controls have been re-set in consoles for easy accessibility.

In the Series H D8 tractor, the horsepower at the flywheel also has been boosted to 225 hp by the inclusion of a turbocharger. This makes possible a heavier, stronger machine. The new, faster and more efficient D8 weighs more than 47,000 lb—2½ tons more than its immediate predecessor.

Its standard track shoe is now 24 in. wide instead of 22 in. The ground contact area is 5,505 sq in.

According to Caterpillar engineers, rigidly controlled field tests indicate that the Series H tractor can do about 20% more work than previous models.

A major change—and one which the manufacturer believes will greatly increase the usability of the equipment—is a 50% increase in clearance between the ground and the lowest point on the bevel gear case. Clearance has now been increased to 19½ in.

A decelerator pedal, standard equipment on the torque convertor units, is optional on the direct drive machine.

To go with the Series H D8 tractor, Caterpillar has introduced a new series of matched tools, including straight, angling and "U" dozer blades and a five position ripper.—Caterpillar Tractor Co., Peoria, Ill.

You *know* this plastic daylighting panel retards fire

With this panel, you're sure.

The labels tell you it is safer . . . has passed the down-to-earth, industry-accepted tests that let you specify it with confidence.

It won't support combustion—can't contribute to spread of a blaze. That's why it is *right* for a school . . . a factory . . . a hospital—any place where code requirements are stiff and safety is a must.

It's safer because it is made with Hetron®, the inherently flame-retardant polyester plastic which we make. You can get colorful, non-shattering Hetron panels and flat panes from any leading fabricator of polyester glazing material. For safety's sake, be sure to specify "Hetron" or "fire-retardant grade." It costs a little more . . . and is worth it. For names of fabricators who can supply you, write us.

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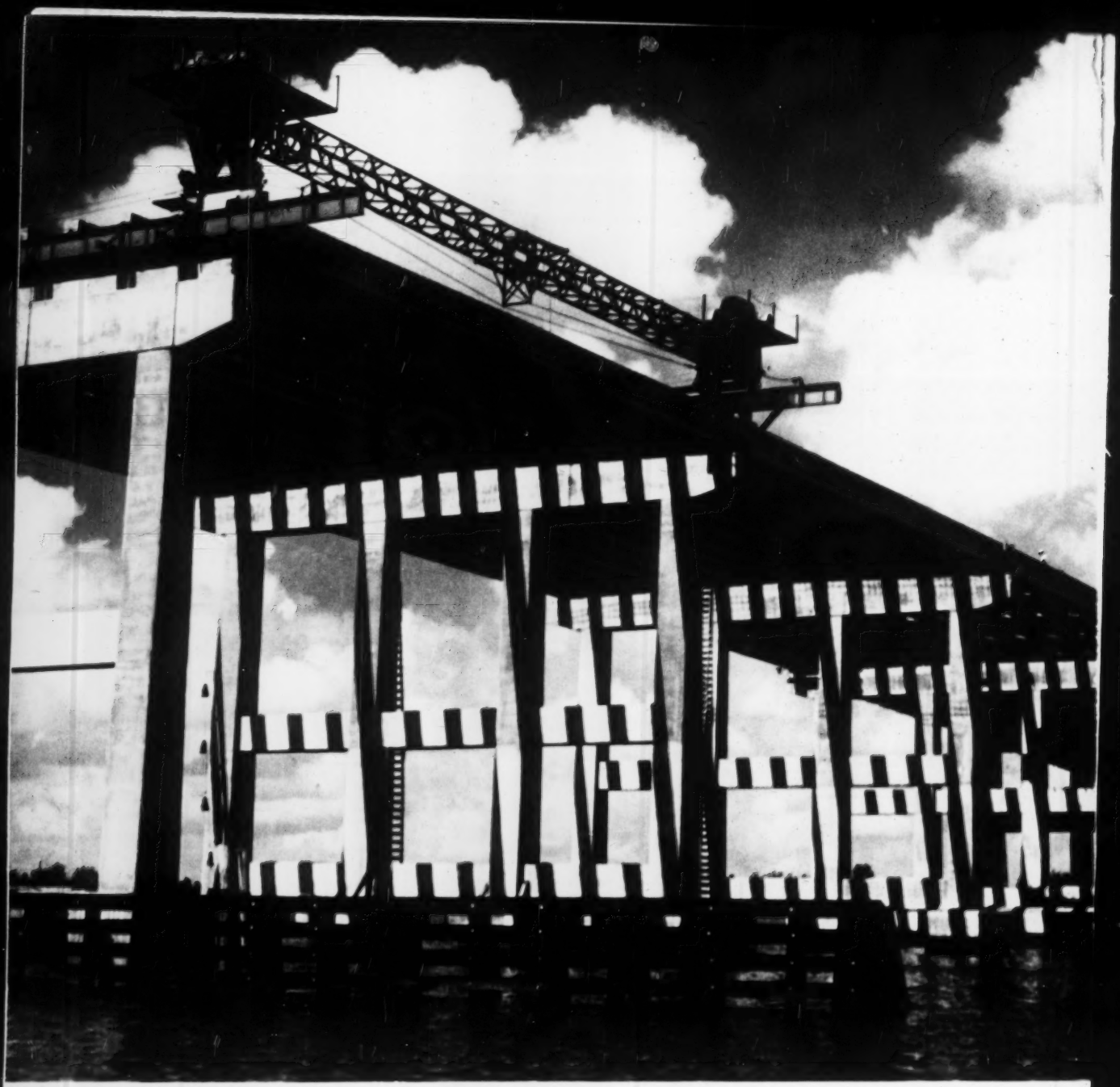


Contractor speeds $3,500,000 causeway job with floating

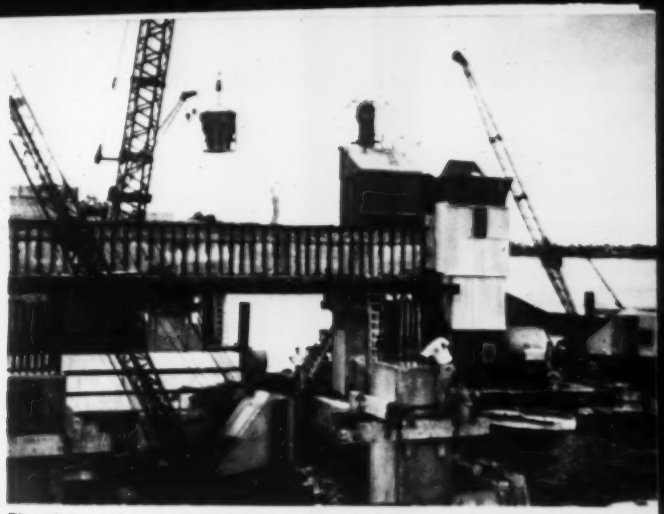
GULF MAKES THINGS

What's the best way to get 20,000 cubic feet of concrete from shore to site to pour piers and struts for a major bridge project? And at the same time have fuels and lubricants always on hand instream?

That was the problem faced by Heavy Constructors, Inc., of Miami and Fort Lauderdale, who are now building the new 36th Street Causeway Bridge linking Miami and Miami Beach. They solved the problem handily with two unusual barge rigs, and in the process found Gulf makes things run better in more ways than one.

Heavy Constructors rigged one barge as a floating service station for Gulf fuels and lubricants, fresh water and cement storage. At the shore site, Gulf services the barge with Good Gulf Gasoline, Gulf Dieselect Fuel, Gulf lubricants and all other necessary petroleum products including form oil.

They rigged another barge as a floating ready mix plant, with a batch plant, two truck-type mixers, and a diesel-powered crane. Concrete is mixed and poured at the rate of 22 cubic yards an hour.



Floating ready mix plant pulls up for the pour at a section of the causeway. Piers, which rest on piling, are formed and poured in place. Pre stressed concrete beams are used as a foundation for decking and surfacing.

Floating service station pulls up at shore site for refueling by Gulf. This rig stores and transports 5100 gallons of Gulf Diesel-ect Fuel, 1650 gallons of Good Gulf Gasoline, 8000 gallons of fresh water, 400 barrels of cement.

Miami's new 36th Street Causeway Bridge takes shape in a remarkably efficient construction procedure by Heavy Constructors, Inc., of Miami and Fort Lauderdale. Floating rigs deliver concrete and Gulf fuels and lubricants wherever needed.

Gulf service station . . .

RUN BETTER!

The key to the success of the whole system is delivery of materials to the shore site—according to J. R. Bailey, General Superintendent. Working with Gulf they eliminated the big expense of building storage facilities ashore, and the time delay of transferring fuels and oils from shore tanks to barges.

How about *your* projects? See how Gulf makes things run better—with quality fuels and lubricants and prompt delivery from a dependable source of supply. Contact your nearest Gulf office or use coupon.

GULF

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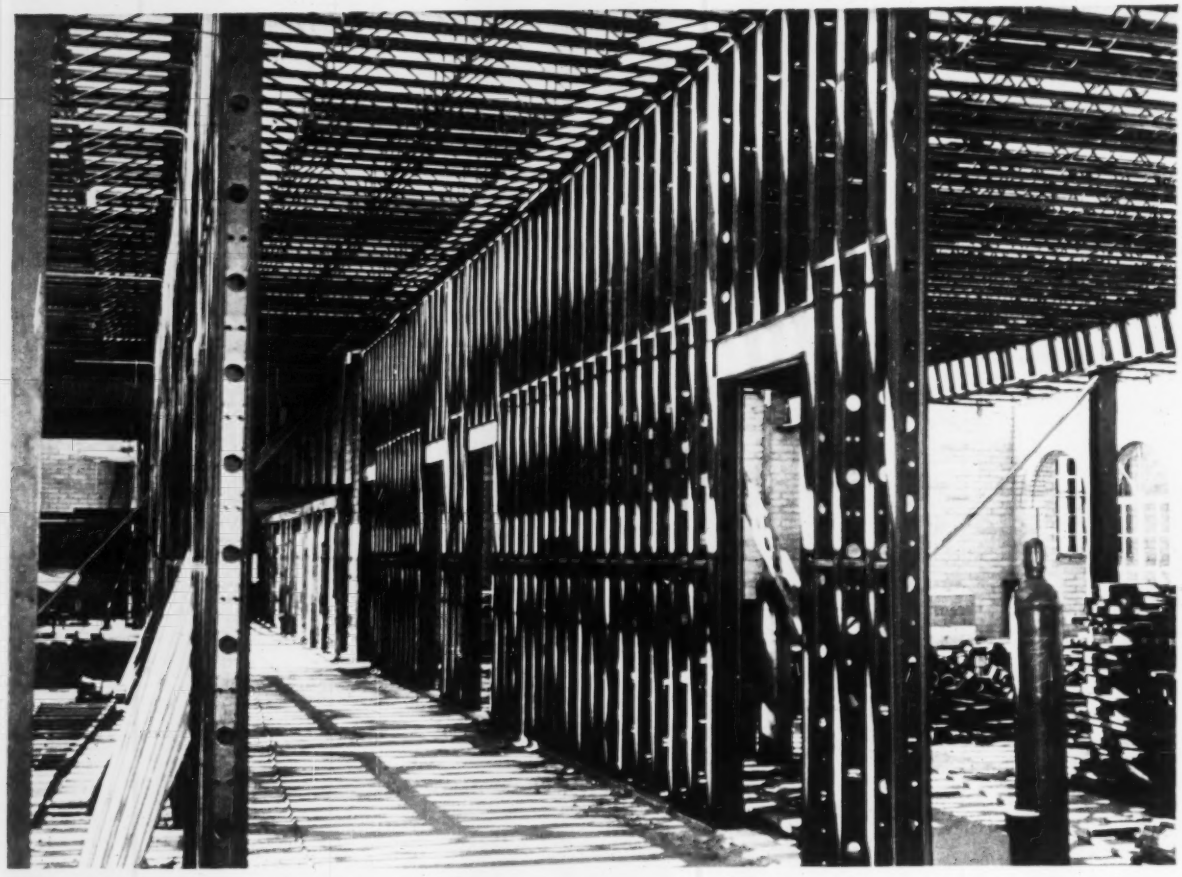
- ☐ Send me a copy of "Gulf and Your Business."
- ☐ Send me a copy of "Contractors' Guide" (Lubrication and Maintenance)

Name

Company

Street

City Zone State



LIGHTSTEEL cuts dead-weight loads in five-story seminary

Immaculate Heart Seminary, part of the multi-million dollar expansion program at San Diego University, is one of the largest concrete-block structures in the west. Of Spanish Renaissance architecture, the building contains 141,000 sq. ft. of floor space.

Stanley Burne, structural engineer for the job, says, "We used LIGHTSTEEL studs with metal lath and plaster, throughout the interior, with the object of securing lightness with strength, fireproofing, as well as freedom from deterioration and from dry rot. The open-work pattern of these studs, simplified installation of conduits, piping, etc., as well as the fibreglass insulation.

"In the stepped-back upper stories we also used LIGHTSTEEL studs for the exterior walls, to avoid excessive dead loads at these locations. Out here on the west coast, buildings must be designed to resist seismic forces, which are based upon a certain percentage of the dead weight of a structure. Hence unnecessary dead weight is an item that should be reduced where conditions permit. At the same time, walls are used as 'shear panels,' resisting lateral forces, and require shear values accordingly. It is relatively simple to install the necessary diagonal tension members in these steel studs, and get a high shear value.

"We are using this same construction in other major buildings at the university."

For full details of versatile LIGHTSTEEL — specifications, physical and structural properties and loading tables — send for 28-page catalog SS-24.

PENN METAL COMPANY, INC.

General Sales Office:
40 Central Street, Boston 9, Mass.
Plant: Parkersburg, W. Va.
District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

IMMACULATE HEART SEMINARY
Architect: Edgar V. Ullrich, A.I.A.
Structural Engineer: Stanley Burne
LIGHTSTEEL **Erector:** L. A. Lathing Co.
LIGHTSTEEL **Supplier:** Chambers Steel Co.
General Contractor: L. J. Ninteman Construction Co., Inc.

METAL MARK Penmetal 1869 OF QUALITY

PM-187 *a name to remember*

Publications

Castings—A line of general construction and maintenance castings is illustrated with descriptions and specifications provided. Conveniently arranged for quick reference. 166-page catalog. NEENAH FOUNDRY CO., NEENAH, WIS.

Stone—A comprehensive review of its uses in contemporary architecture. 46-page booklet. CHICAGO CUT STONE CONTRACTORS ASSOCIATION, c/o MR. FOSTER RECHEL, 3215 W. BIRCHWOOD, SKOKIE, ILL.

Fire protection—Descriptions and examples of specialized equipment and methods for controlling and extinguishing fire. "Special Hazard Fire Protection." GRINNELL CO., PROVIDENCE 1, R. I.

Rafter design—A new series of roof truss designs to comply with a 16-in. spacing requirement. No. 677. TIMBER ENGINEERING CO., 1319 18TH ST., N.W., WASHINGTON 6, D. C.

Slotted angles—Applications, assembly methods and load tables for Flexangle slotted angles. 8 pages. FLEXANGLE CORP., YOUNGSTOWN, OHIO.

Sphere construction—A 16 mm sound and color film traces the evolution of a 190-ft. dia. steel sphere, built to house an atomic reactor. CHICAGO BRIDGE AND IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL.

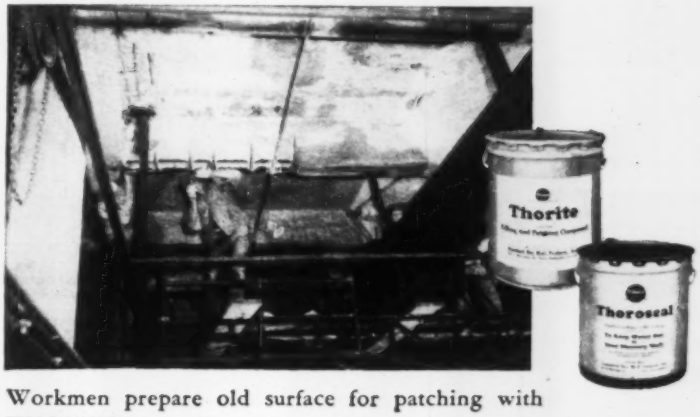
Copper plumbing—"Save on the Home You Build" contains information on copper plumbing, heating and air-conditioning systems, and cost comparisons with other plumbing systems. 26 pages. CHASE BRASS & COPPER CO., WATERBURY 20, CONN.

School construction—A color, sound, slide film "Specifications for Today's Schools" on a method of construction featuring hollow, precast concrete plank. THE FLEXICORE CO., INC., 1932 E. MONUMENT AVE., DAYTON, OHIO.

Window units—Specifications and construction information on wood window units, including double-hung, projected-casement and sliding units. 40 pages. CURTIS COMPANIES, INC., CLINTON, IOWA.

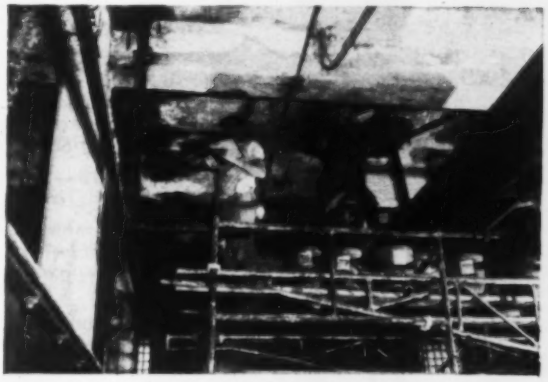
Channel studs—"Load-Bearing Punched-Channel Studs" includes loading tables, properties and engineering data for five sizes of channel studs, track and bridging. 6 pages. STRAN-STEEL CORP., DETROIT 29, MICH.

How THORITE and THOROSEAL made this underground structure sound again!



Workmen prepare old surface for patching with THORITE.

Water has entered the concrete and caused corrosion of reinforcing rods, blistering the concrete off surface and causing structural weakness throughout building.



Reinforcing was cleaned, all corrosion was removed and brush coat of THORITE applied over entire patching area, then filled in with trowel coats of THORITE, even with surrounding surfaces.

THORITE Patching Mortar sets in 20 to 30 minutes and can be coated with THOROSEAL while hardening.

"How to do it" GET OUR 16 PAGE BROCHURE

STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PENNA. CENTERVILLE, IND.

Sheffield High-Strength Bolts save fastening costs on Kansas City's Manchester Bridge

Over thirty-five tons of Sheffield High-Strength Bolts were used in assembly of Kansas City's next-to-largest bridge. The selection of High Strength Bolts over rivets was made principally for cost and performance advantages.

What are those advantages? To cite a few:

FASTER FASTENING TIME: Two men with little training can install about 400 bolts a day. Using an automatic torque control wrench, an experienced two-man team can run up as many as 800 bolts per day. Compare this with 300 to 350 rivets for the average highly skilled (and hard to find) four-man riveting crew.

GREATER STRENGTH: Industrial Fasteners Institute tests show two high-strength bolts have the shear strength of three rivets.

PERMANENCE: Once tightened to proper tension, high-strength bolts *stay tight* for the life of the structure. This is true even under severe vibrational loads as on railroad bridges where rivets often loosen in a year.

LOWER COSTS: High-strength bolts are replacing rivets in all types of structural steel assembly—with net savings in joint costs up to 50%. And bolts save inspection costs, too. The AISC specifies only 5% to 10% of bolted connections need be inspected after the job's done. 100% inspection of rivets is required.

These are some of the reasons why nearly all new major structures in many of our larger cities—and thousands of vehicular and railroad bridges everywhere—are high-strength bolted. Get all the facts from your nearby Sheffield office.

SHEFFIELD

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High-Strength Structural Bolts

Write today for Sheffield's new booklet "High-Strength Bolts." Gives the complete story, plus assembly and other specifications approved by Research Council on Riveted and Bolted Structural Joints.

SHEFFIELD DIVISION

ARMCO STEEL CORPORATION

OTHER DIVISIONS AND SUBSIDIARIES: Armco Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

K. M. Hoover to Supervise Bay Area Transit Affairs

Keneth M. Hoover, nationally known authority on transportation, joined the five-county San Francisco Bay Area Rapid Transit District as chief engineer.

Since his graduation from South Dakota State College of Engineering and Agriculture in 1926, Mr. Hoover has held managerial technical posts with the Pittsburgh Railways Co., the Brooklyn Manhattan Transit Co., New York City Transit Authority, Philadelphia Transportation Co., and Worcester Street Railways Co.

Mr. Hoover has been a transportation consultant since 1953. He took part in studies of transportation problems in Atlanta; Rochester, N. Y.; Worcester; and New York City. For the past three years he has been director of the National Capital Regional Mass Transportation Survey in Washington, D. C.

He will be the chief engineering adviser to the board of directors and will direct and co-ordinate the activities of engineering consultants.

Andrew C. Paton Named Metcalf & Eddy Partner

Andrew C. Paton has been admitted to partnership in Metcalf & Eddy, consulting engineering firm of Boston.

Mr. Paton first joined Metcalf & Eddy in 1942, after working with the Massachusetts Department of Public Works. During World War II he served in a Naval Construction Battalion in the Pacific. After the war he was chief engineer with Henley Lundgren Co., Shrewsbury, Mass., on construction of roads, bridges and large sewers.

He rejoined Metcalf & Eddy in 1951. Now he is employed as director of operations at the firm's Boston offices.

Careers

Public Works

Markham E. Salsbury has been appointed the new chief engineer of the Los Angeles County Flood Control District.

Earl F. Graham has been named chief of the construction division of the Corps of Engineers Persian Gulf district at Teheran, Iran.

Frank C. Mohler has been named chief hydrologist with the Florida Dept. of Water Resources.

Paul E. Stephenson has retired as supervising hydraulic engineer of the State of California's Dept. of Water Resources.

Col. Carl H. Bronn has been assigned as resident member in Washington, D. C. for the Army's Board of Engineers for Rivers and Harbors.

Business

Charles R. Hetherington, director and managing director of Pacific Petroleums Ltd. and vice president of Westcoast Transmission Co. Ltd., Calgary, Canada, has resigned to enter private consulting practice.

John W. Johnson, superintendent of the New York Department of Public Works under Gov. Averell Harriman's administration, has joined with **William H. McFarland** to form the consulting engineering firm of McFarland-Johnson.

The new company will have offices in Buffalo and Binghamton, N. Y. Mr. McFarland has been in consulting practice in Binghamton.

Retirements

Raymond Evanson, a civil engineer with more than 40 years service, has retired from the Portland, Ore. District, Corps of Engineers.

William M. MacGibbon, civil engineer with 23 years of government service, has retired from the Portland District, Corps of Engineers.

Associations

Donald D. King has been named assistant to the secretary of the American Society of Civil Engineers, New York City. He previously had served on the headquarters staff of ASCE and for a period was editor of "Civil Engineering." He has since been associated with other magazines in the construction field.

Clarence H. Trapp, of Trapp Construction Co., Columbus, Ohio, was elected president of the Columbus chapter of Associated General Contractors.

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STEEL PLATE
FABRICATION

★ Boiler Casings
★ Boiler Breechings
★ Flues and Ducts
★ Condenser Shells
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★ Heavy Turbine Housings
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★ Wind Tunnels
★ Crane Bridge Girders
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★ Rigid Frames
★ Roll-Over Fixtures
★ Tank Turrets
★ Gun Mounts
★ Heavy Truck Bodies
★ Engine Frames and Bases
★ Crawler Frames
★ Press Platens and Beds
★ Press Columns
★ Heavy Machinery Parts and Assemblies
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★ Furnace Roof Rings
★ Design Conversion of Castings to Weldments

MACHINING
★ Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

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★ For Buildings, Bridges and Special Purpose Structures
Drum Gates
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THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN
Branch Offices in New York and Chicago
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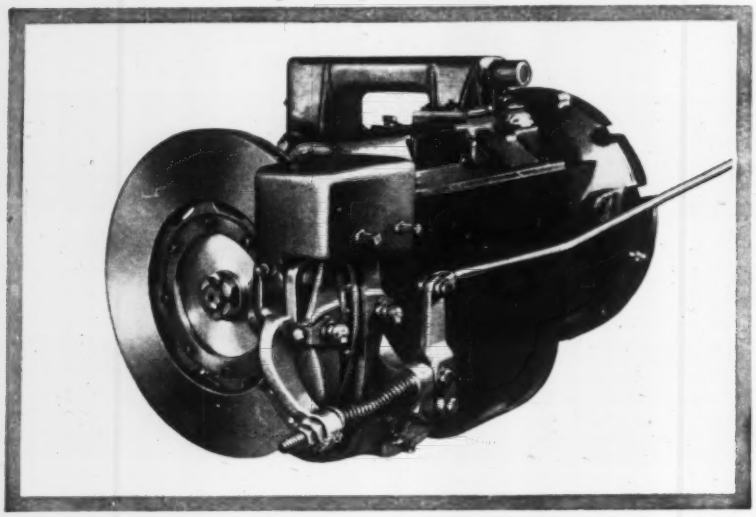
You Get Positive Protection Against Runaway or Parking Accidents When You Specify TRU-STOP Brakes



TRU-STOP brakes operate directly on the drive shaft. This means that they are not only excellent parking brakes, but dependable emergency service brakes as well. There's no dangerous self-energizing. TRU-STOP brakes have the surplus capacity for repeated use as an auxiliary to service brakes.

100% Ventilation Minimizes Fading

Brake efficiency depends on ability to dissipate heat rapidly and so prevent fading. TRU-STOP brakes are 100% ventilated. Discs are exposed to air even while braking. The TRU-STOP ventilation system circulates air *between* the disc plates.

Longer Life with Uniform Brake Pressure

The discs of TRU-STOP brakes are squeezed between the flat surfaces of the shoes. The brake lever operates both the front and rear lever arms simultaneously, and pressure is exerted on the center of each shoe. This puts the entire lining surface in contact, provides for even wear. TRU-STOP brake linings are *easy* to replace.

FOR POSITIVE PROTECTION...

Specify* TRU-STOP BRAKES *on* ANY *Heavy-Duty Equipment that Requires Braking

***WRITE* for Catalogs DH-33 and DH-530**

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Obituaries

Harold V. Coes, 75, retired vice president and director of Ford, Bacon & Davis, Inc., New York engineering firm. In 1946, he was consulting engineer to the planning and development board of the Government of India. A graduate of the Massachusetts Institute of Technology in 1906, he was president of the American Society of Mechanical Engineers in 1942-43.

Sydney S. Walker, 72, a retired civil engineer at Elkins Park, Pa. He was employed by the Atlantic Refining Co. as senior structural designer for 23 years when he retired in 1954. He was chief designer of the steel structure for the subway system in Buenos Aires, Argentina. Mr. Walker was a graduate of the University of Pennsylvania.

Conrad F. Shindel, 49, a former construction engineer for the Pennsylvania Department of Highways. He had worked with the Pennsylvania General State Authority as a construction supervisor before joining the Department of Highways in 1957. Mr. Shindel attended Lehigh University and served in the Navy During World War II.

Merton E. James, 77, a retired civil engineer with the U.S. Army Corps of Engineers. He served at Oak Ridge, Tenn., and was constructor of dams on Tennessee Valley Authority projects. Before his retirement in 1952, Mr. James was in Omaha, Neb., with the Corps of Engineers on the Missouri Valley Authority. He was a 1904 graduate of Rensselaer Polytechnic Institute.

John H. Quense, 80, retired civil engineer, supervised design and construction of Seattle City Light Company's Diablo Dam. He was a graduate of the University of Minnesota in 1902 and University of Minnesota in 1902.

David Nabow, 63, vice president and chief engineer of the Duke Power Co. He was a 1916 graduate of Columbia University with a degree in civil engineering. He was designer for Duke Power's eight steam electric generating plants.

Henry Stoneson, 63, founder and head of Stoneson Development Corp., San Francisco. A prolific builder, he is credited with erection of more than 15,000 dwelling units in the San Francisco Bay Area since 1921. At its peak his organization was building 500 homes per year. Stoneson's crowning achievement was the $35-million private home, apartment and shopping center known as Stonestown.

NEW

MANITOWOC TRUCK CRANES

. . . Now you can get the famous Manitowoc crane performance on rubber

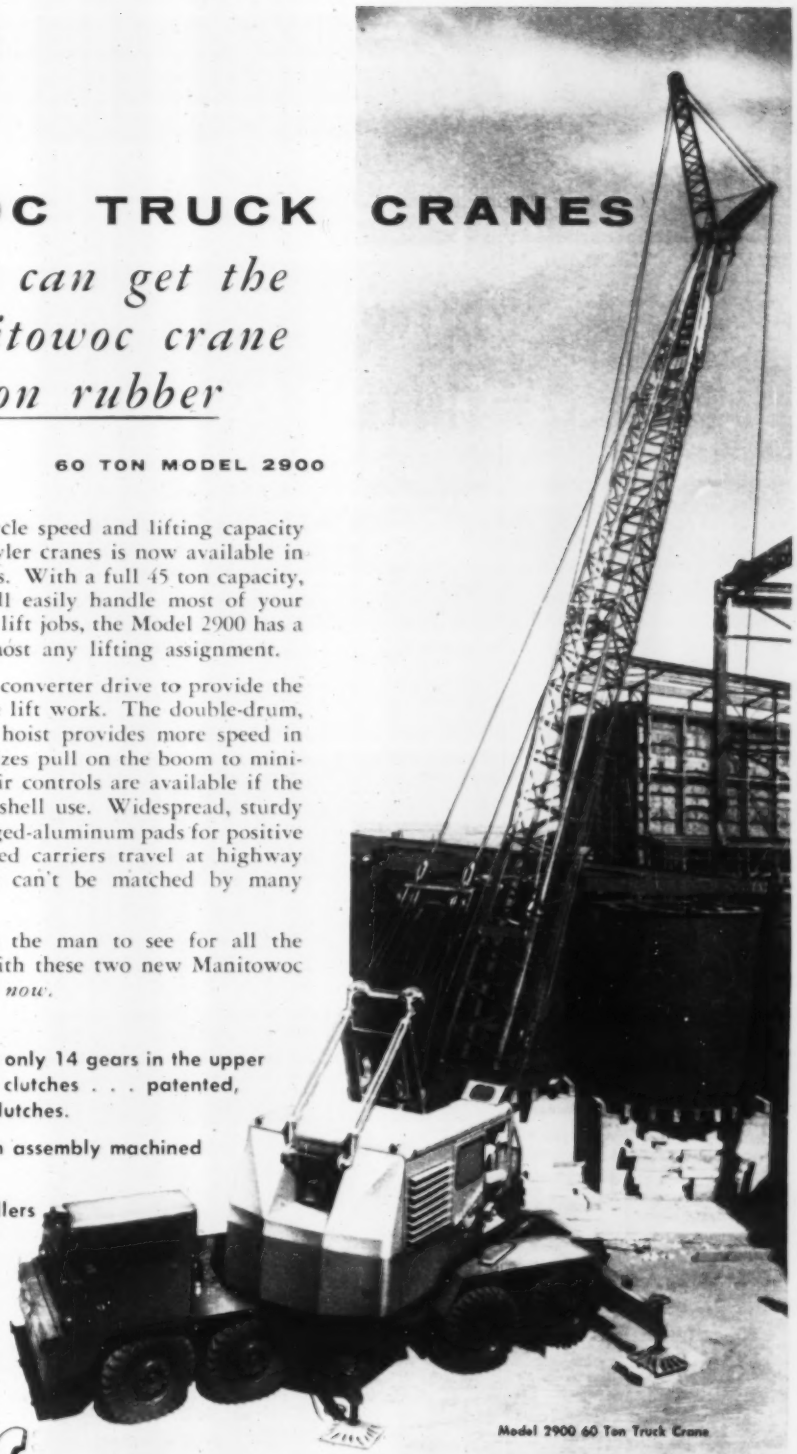
45 TON MODEL 2800 **60 TON MODEL 2900**

The superior precise control, cycle speed and lifting capacity you get only in Manitowoc crawler cranes is now available in two new Manitowoc truck cranes. With a full 45 ton capacity, the Model 2800 truck crane will easily handle most of your crane jobs. For the bigger, high lift jobs, the Model 2900 has a true 60 ton capacity to meet most any lifting assignment.

Both rigs feature smooth torque converter drive to provide the most accurate control for precise lift work. The double-drum, worm drive independent boom hoist provides more speed in raising and lowering, and equalizes pull on the boom to minimize cable wear. Short throw air controls are available if the rigs are put to dragline or clamshell use. Widespread, sturdy outriggers have heavy duty, bridged-aluminum pads for positive "high lift" stability. Big, rugged carriers travel at highway speeds, give you mobility that can't be matched by many smaller truck cranes.

Your Manitowoc distributor is the man to see for all the profitable advantages you get with these two new Manitowoc truck cranes . . . give him a call *now*.

- **Simple, power-saving design uses only 14 gears in the upper works. Precise, disc-type swing clutches . . . patented, plunger drum control on main clutches.**
- **Massive ring gear and roller path assembly machined from tough, rolled tire steel.**
- **Adjustable, self-aligning hook rollers with precise, 12-point adjustment to keep rollers perfectly matched with the roller path.**
- **Self-removing counterweight is standard equipment. Scientific load distribution assures legal load limit.**



Model 2900 60 Ton Truck Crane

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

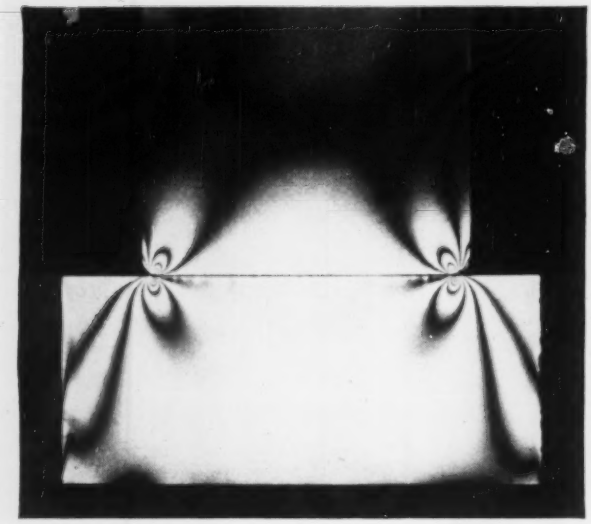
MANITOWOC, WISCONSIN

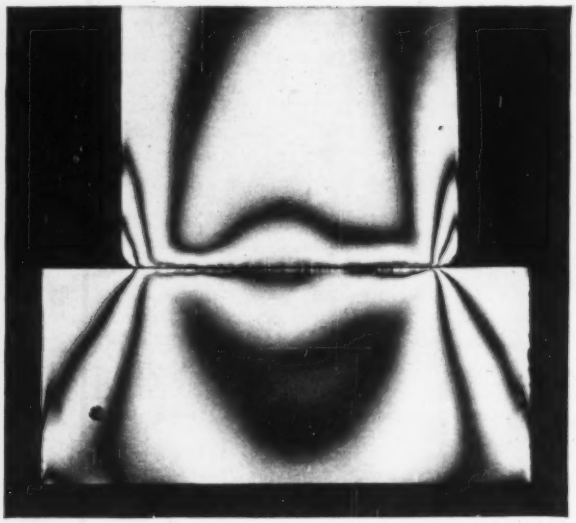
CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	1¼-YD. - 5½-YD.	1¼-YD. - 6-YD.	1½-YD. - 3-YD.

One in a series of technical reports by Bower

BEARING BRIEFINGS

ROLLER BEARING LIFE AND CAPACITY LINKED TO STRESS DISTRIBUTION





These reproductions of photoelastic studies contain important evidence for every engineer and designer concerned with the performance and selection of roller bearings. In these photographs, the alternate dark and light areas, called fringes, indicate not only the magnitude of stress but also the stress distribution. The photographs were taken by Bower Research Engineers during a study of stress distribution in roller bearings.

The subjects represent rollers and raceways of two roller bearings under identical loads. The illustration at the left shows a roller of conventional design. The illustration at the right shows a Bower "Profiled" roller. That is, the roller is precision ground with a large radius generated along the body of the roller—a predetermined and controlled distance from each end.

The conventional roller photo (left) clearly shows how, under load, stress concentration builds up in and near the roller ends. This is called edge-loading. Such areas of concentrated stress are the breeding grounds for metal fatigue and eventual bearing failure.

In the photo of the "Profiled" roller (right) stress lines can be seen uniformly distributed across the whole length of the roller and raceway. There are no points of excessive stress concentration, consequently no starting points for early fatigue. Such a "Profiled" roller exhibits a great advantage in improved load carrying capacity, a most important bearing requirement.

Under actual operating conditions, Bower "Profiled" roller bearings show a considerably longer life at higher speeds and under greater loads than conventional roller bearings.

Because of this, and of other Bower features to be discussed in later technical reports, we suggest that you consider the advantages of Bower bearings in satisfying your future bearing requirements.

* * * *

Bower engineers are always available, should you desire assistance or advice on bearing problems. Where product design calls for tapered roller bearings or journal roller assemblies, Bower makes these also in a full range of types and sizes.

BOWER ROLLER BEARINGS

BOWER ROLLER BEARING DIVISION — FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICHIGAN

Minnesota steel highway bridge . . .

Averages $16 per Sq Ft of Deck

At $1,722,517 Walter D. Giertson Co., Minneapolis, Minn., placed the successful bid for this 1,594-ft bridge over the Minnesota River, Chicago and Northwestern Railway and Trunk Highway 14 at Mankato, Minn.

This award by the Minnesota Highway Dept., is 14% below the engineer's estimate.

John H. Swanberg is chief engineer and A. E. LaBonte bridge engineer of the Highway Dept. at St. Paul.

Bridge roadway width varies from 58 to 67 ft, with a 4-ft sidewalk on the west side and a 2-ft curb on the east side, for a total of 106,596 sq ft between railings. This gives an average unit cost of $16.16 a sq ft. The four river piers are approximately 47 ft high. Fourteen other piers range from 11 to 40 ft high.

The state will furnish 7,600 ft of steel piling for the river piers.

The 723,137 lb of structural steel and 2,816,670 lb of structural phosphorus chromium steel were each priced in the low bid at 21.5 cents a lb, and account for 44% of the contract. Other bids on the structural steel ranged from a low of 18 cents to a high of 27 cents, and on the structural phosphorus chromium steel, from 20.3 cents to 24.5 cents a lb.

Cement content per cu yd of concrete is: Class A1, 1.5 bbl; Class 1X1, 1.8 bbl; Class 3Y6, 1.6 bbl; Class 3Y6, Grade Y, 1.8 bbl; and Class 1B8, 1.3 bbl.

Prevailing wages in Minneapolis include: tractor operators, including bulldozers, $3.08-$3.30; power crane & shovel operators $3.52-$3.783; structural iron workers $3.47; carpenters $3.30; truck drivers $2.55-$2.70; common laborers $2.70.

The bidding on this bridge job included:

1C Walter D. Giertsen Co., Minneapolis	$1,722,517
2 Al Johnson Const Co., Minneapolis	1,793,318
14 M. J. McGough Co., St. Paul	2,203,362
EE Minnesota Highway Dept., St. Paul	*2,000,000

* Approximate

Bids: 12-23-58

Items	Unit	Quantity	Unit Prices 1C	2
Concrete mix, +1X1	cy	739.4	$53.00	$25.00
+1A6	cy	1,941.4	53.00	58.00
+3Y6	cy	5,836.6	53.00	56.50
+3Y6,grade Y	cy	136	53.00	160.00
+1B8	cy	420.6	53.00	27.50
Excavation, class DE	cy	3,573	2.75	2.50
class WE	cy	2,448	14.00	2.50
Reinforcement bars	lb	1,016,269	0.134	0.114
Wrought bronze	lb	127	2.30	3.00
Steel, structural	lb	723,137	0.215	0.192
phosphorus chrome	lb	2,816,670	0.215	0.217
Floor drains, type 1	ea	30	90.00	140.00
type 2	ea	16	90.00	140.00
type 3	ea	2	90.00	140.00
Name plates, standard	ea	5	35.00	54.00
Ornamental metal railing	lf	3,190	12.00	14.50
Fixed bearing assem, tp F1	ea	40	450.00	500.00
tp F1A & F1B	ea	3	600.00	900.00
tp F2	ea	16	775.00	1,050
Expans bearing, tp E1 & E1A	ea	16	200.00	365.00
tp E2	ea	44	365.00	275.00
tp E3	ea	24	545.00	550.00
tp E4	ea	8	930.00	1,000
Electric lighting system	ls	job	18,000	22,000
Steel piling deliver	lb	1,551,310	0.075	0.095
drive	lf	35,980	0.81	1.30
test piles, 60', in place	ea	2	350.00	300.00
65', in place	ea	3	350.00	450.00
Loading tests	ea	4	700.00	900.00
Waterproofing, 3-ply joint	lf	15	5.00	6.00
Timber approach curb	ea	4	30.00	55.00
Sheet copper	lb	1,989	1.75	2.00

Commence: 2-15-59. Complete: 11-1-60.
Liquidated damages: $30 cal day.

Lewiston, Idaho, Gets Concrete Pipe Sewers

The $63,791 award for 23,950 lin ft of 8-to-15-in. concrete pipe sewer, by the Lewiston, Idaho, Department of Engineering, went to Howard Snyder, Lewiston, on a base bid only 1.3% under the second but almost 30% below the high bid. Elmer E. Somsville is city engineer.

Contract changes shown in the bid analysis increased the low bid by $3,855.

The seven bids on this sewer included:

Base Bid

1C Howard Snyder, Lewiston	$59,936
2 George Meacham & Son, Lewiston	60,710
7 Lester N. Johnson, Yardley, Wash	85,769

Bids: 11-24-58

Items	Unit	Quantity	Unit Prices 1C	2
Excavation & backfill	cy	13,800	$1.25	$1.25
Conc pipe, 12"	lf	575	2.10	1.80
10"	lf	1,140	1.75	1.45
8"	lf	22,236	1.13	1.10

Bids: 11-24-58

Items	Unit	Quantity	Unit Prices 1C	2
Manhole depth over 8	vf	27	20.00	25.00
plain	ea	56	175.00	190.00
drop	ea	5	200.00	250.00
Lampwell	ea	25	45.00	50.00
Wye connection, 12"x4"	ea	10	8.00	9.25
10"x4"	ea	30	8.00	8.50
8"x4"	ea	225	4.50	6.00
Bedding gravel, ¾" minus	cy	100	2.50	3.00
Drop into manhole and conn to manhole	ls	job	200.00	500.00

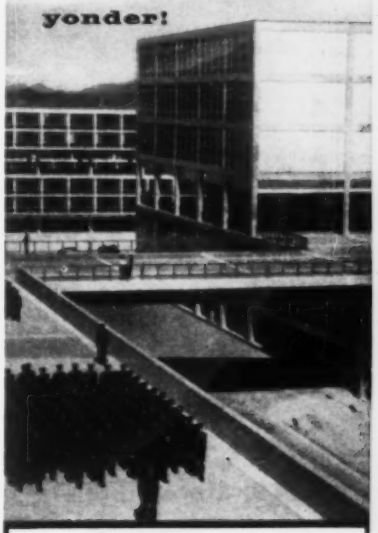
Contract Changes, Increase of $3,855

Conc pipe, 15", in place	lf	*366	$3.20	$3.25
12", in place	lf	*2,040	2.10	1.80
Wye conn, 15"x4"	ea	**6	25.00	12.00
12"x4"	ea	***10	25.00	9.25

* Replaces 2,200 lin ft of 8-in. concrete pipe
** Replaces 10 8"x4x wyes
*** Replaces 6 8"x4" wyes
In addition, 1 lampwell was replaced by 1 manhole

Awarded: 12-1-58
Commenced: 1-5-59
Completion schedule: 180 working days
Liquidated damages: $30 day

HORNFLEX
Sealant...
and the wild blue yonder!



All the wide open beauty of *curtain wall design* ...with none of the *weather sealing problems*

That's what the Air Force wanted for their new Academy and that's what they got with Hornflex Thiokol* LP-32 Sealant.

Hornflex Sealant compresses, stretches and flexes with wall movement—yet keeps a solid weather seal at all temperatures. Bonds lastingly to aluminum, glass, steel, concrete and stone to form a watertight seam that stays put.

Hornflex Sealant also has many uses in swimming pool, highway and bridge construction. Write for free 8-page catalog ENR 5555.

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Plants in Long Island City, Chicago • Houston • Los Angeles • San Francisco • Portland, Ore. • Toronto
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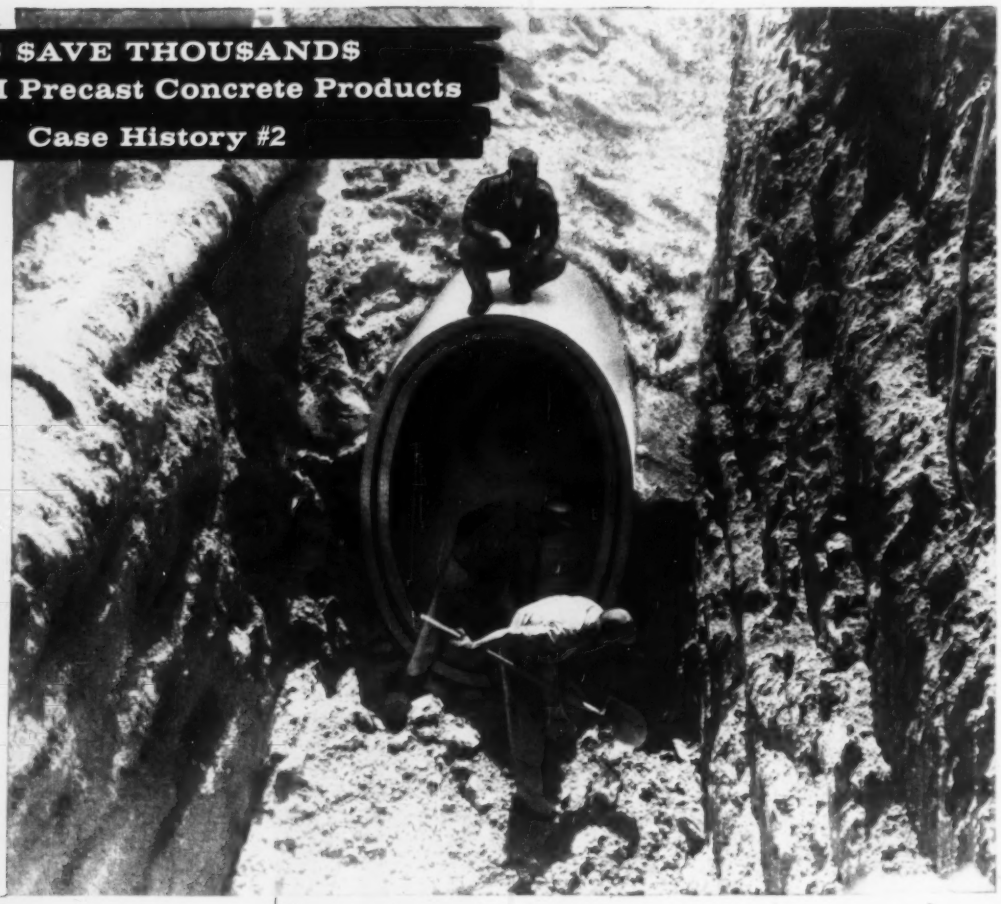
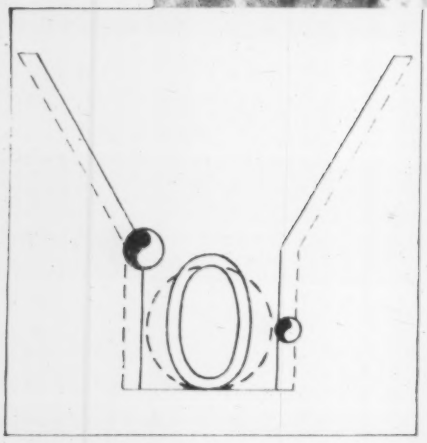
*Registered trademark of Thiokol Chemical Corp.

PHOTOS: U. S. AIR FORCE

INCHE$ $AVE THOU$AND$
with A-M Precast Concrete Products
Case History #2





Existing water and gas mains limit trench width of Pontiac, Michigan storm sewer. HI-HED provides greater capacity within a workable area.

A-M HI-HED PIPE CUTS EXCAVATION COSTS DRASTICALLY!

- 18% narrower than equivalent round pipe, HI-HED Pipe cuts valuable inches from trench widths—can save contractors thousands of dollars in excavation costs.
- HI-HED saves customers the expense of removing or relocating utility lines.
- Another bonus benefit—HI-HED pipe design means higher velocities at low flow.

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† Connecticut—BA 3/4—U. S. Eng., 310 State St., Springfield, Mass., road relocation, Naugatuck River Dam Areas A, B and D, Thomaston Dam, Thomaston, CIVENG-19-016-59-3. $1,000,000. Plans deposit $25. Fenton J. Keyes Assocs., 202 Washington St., Providence, R. I., engrs. CD 1-12.

BUILDINGS—BA

▲ Mass., Melrose—SCHOOL—BA 3/3—P. Wks. Dpt., City Hall, high school addns., alterations, Lynn Fells Parkway. $1,600,000. Plans deposit $100. Valtz & Kimberley, Inc., 820 Lynn Fells Parkway, archt. CD 2-16.

▲ Mass., Melrose—SCHOOL—BA 3/4—City Bldg. Planning Comn., City Hall, high school addn., alterations, Lynn Fells Parkway. $1,600,000. Plans deposit $100. Valtz & Kimberley, Inc., 820 Lynn Fells Parkway, archt. CD 7-9.

HEAVY CONSTRUCTION—LB & CA

▲ NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord. W. H. Hinman, Inc., 58 Main St., Westbrook, Me., CA $2,147,011, hot. b. conc. 1.913 mi. two 66 ft., two 47 ft. and two 78 ft. steel beam bridges, Bethlehem and Littleton, Grafton Co. Bids Jan. 8. CD 1-13, under LB.

▲ VERMONT—State Dpt. Hys., State Office Bldg., Montpelier.

S. V. Rossi Constr. Co., Inc., 49 McDermott Ave., Torrington, Conn., CA $1,276,837, est. $1,300,000, sub-base with b. conc. pavement surf. course, incl. two 3 span composite WF beam bridges town of Berlin and City of Montpelier, Town Line and extend westerly 0.544 mi. to proposed Winooski River Bridge. I-89-2 (3). Contr. 1, Berlin, Montpelier and Middlesex. CD 2-10, under LB.

BUILDINGS—LB & CA

▲ Sewell & Smith Constr. Co., Irving Square, Framingham, Mass., LB $1,153,000, DORMITORY, No. 19, campus, AMHERST, MASS., University of Mass., Alumni Assn., Amherst, Mass. Bids Feb. 12. CD 1-28.

▲ Frouge Constr. Co., 147 North Ave., Bridgeport, Conn., CA $2,223,780, Brien McMahon JUNIOR HIGH SCHOOL, Highland Ave., NORWALK, CONN., Town of Norwalk, City Clerk, South Norwalk, Conn. Bids Jan. 20, awarded Feb. 11. CD 1-26, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ Pa., Phila.—SCIENCE—BA 3/11. General State Auth., 18th and Herr Sts., Harrisburg, science bldg. for Temple University, Broad and Montgomery Aves., $3,200,000. Plans deposit $50 general constr., $15 others. Extended date. Wilson, Sawtelle, 1601 Locust St., Zone 3, archts. Severud, Elstad-Krueger Assocs., 425 Lexington Ave., New York, N. Y., engrs. CD 1-28.

HEAVY CONSTRUCTION—LB & CA

▲ Woodcrest Constr. Co., 149 Lexington Ave., New York 17, N. Y., CA $1,150,656, Contr. No. 800, Riverside Drive viaduct reconstr. St. Clares Pl. to W. 155th St., NEW YORK, N. Y., President Manhattan Boro., Rm. 2034, Municipal Bldg., New York 7, N. Y. Bids Dec. 16. CD 12-22, under LB.

BUILDINGS—LB & CA

▲ Walter A. Stanley Constr. Co., Railroad Ave., Deposit, N. Y., LB $2,146,000, ANIMAL HUSBANDRY, incl. service connections, New York State College, ITHACA, N. Y., Bureau Contracts, Dpt. P. Wks., 12th Fl., State Office Bldg., Albany, N. Y. Bids Feb. 11. CD 1-20.

▲ Veemilya-Brown Co., Inc., 100 E. 42nd St., New York, N. Y., CA Est. $4,000,000, 6 story bldg. E. 9th St., 5 story bldg. E. 4th St., 1 story bldg. Astor Pl. for SCHOOL of ENGINEERING, NEW YORK, N. Y., Cooper Union, Cooper Sq., 4th Ave. and E. 7th St., New York 3, N. Y. Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., archts. CD 7-18.

▲ Stewart M. Muller Constr. Co., 47 So. Riverside Ave., Croton, N. Y., CA Est. $2,500,000, 13 story OFFICE, South Broadway from Martane Ave. to Mitchell Pl., WHITE PLAINS, N. Y., Owner, c/o contractor, Robert A. Green, Towers Hill, North Tarrytown, N. Y., archt.

▲ Dean Constr. Co., Inc., 29-28 41st Ave., Long Island City, N. Y., CA $1,308,640, general contract, HIGH SCHOOL, BALDWIN, N. Y., Bd. Educ., Consolidated High School Dist. of Caldwell and West Caldwell, Prospect St., Caldwell, N. J., Mickelwright & Mountford, E. Stuyvesant St., Trenton, N. J., archts. Awarded Jan. 17.

▲ Glenwal Co., U.S. Hy. 46, Saddle Brook, N. J., LB $2,298,000, 4 story HOSPITAL addn., Linwood Ave., RIDGEWOOD, N. J., Valley Hospital, Linwood Ave., Ridgewood, N. J. CD 11-8-57.

▲ Arundel Corp., Standard Oil Bldg., Baltimore 2, Md., CA Est. $7,000,000, Charles P. Crane STEAM ELECTRIC GENERATING PLANT, Carroll Island Rd. near Chase, BALTIMORE, MD., Baltimore Gas & Electric Co., Lexington Bldg., Baltimore 3, Md., Gilbert Assocs., Inc., 525 Lancaster Ave., Reading, Pa., consult. engr. CD 1-8, under Classified.

Williams Constr. Co., Middle River (Baltimore), Md., CA grading for Charles P. Crane Steam Electric Generating Plant, Carroll Island Rd., (Baltimore, Md.).

▲ Victor Beachamp, Inc., 431 Cedar St. N. W., Wash., D. C., CA $2,300,000, 8 story OFFICE, 1700 Block Massachusetts Ave. N. W., WASH., D. C., Brookings Institute, 722 Jackson Place N. W., Wash., D. C., Bids Dec. 23. CD 1-7, under LB.

▲ R. M. Shoemaker Co., 245 S. 24 St., Phila., Pa., CA $3,235,000, Dickinson HIGH SCHOOL, Milltown Rd., New Castle Co., WILMINGTON, DEL., Henry C. Conrad School Dist., Wilmington, Del. Bids Jan. 28. CD 2-2, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲† Fla., Mayport—AIR STATION FACILITIES—BA 3/26—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C., ship and aircraft fueling facilities, U. S. Naval Auxiliary Air Station, NBy-18506, Spec. 18506/58. CD 9-6.

HEAVY CONSTRUCTION—LB & CA

▲ Georgia Power Co., 52 Fairlie St. N.W., Atlanta, Ga., Day Labor, $4,500,000, 230,000 volt electric transmission line from Columbus to Tifton, and 230,000 volt substation at Tifton in Muscogee, Chattahoochee, Webster, Lee, Worth and Tift Counties; $2,500,000, 47 mi. 230,000 volt electric transmission lines and one 125,000 kw substation at Winder, Clayton, DeKalb, Gwinnett and Barrow Counties; $1,800,000, 57 mi. 230,000 volt electric transmission line, Clayton, Fulton and Carroll Counties; $1,250,000, 110,000 volt electric transmission line from Tifton to Plant Mitchell near Albany, Tift, Worth and Dougherty Counties; $800,000, 41 mi. electric transmission line from Tifton to Douglas, Tift and Irwin Counties; $375,000, 110,000 volt electric transmission line from Oliver Dam Flat Rock Substation on Hamilton Rd., Muscogee Co., $1,150,000, 230,000 volt switching station electrical transmission substation addn., Muscogee Co., GEORGIA. Grand total $12,375,000.

▲ FLORIDA—State Rd. Dpt., Tallahassee.

Duval Engineering & Constr. Co., Box 1588, Jacksonville, Fla., CA $1,069,499, 4 and 6-lane, 9 in. C. conc. pavement, 8½ in. limerock base with b. conc. surf. course Type 1, with binder course, 0.936 mi. SR 9 and 115-A between St. Johns River Terminal Co. and 2e St. and Myrtle Ave. to Blvd. in Jacksonville, FAI Proj. No. 1-95-5 (18) 44e, Job No. 72020-3489 and State Job No. 72090-3177, Duval Co. Bids Nov. 18, awarded Feb. 10. CD 11-21, under LB.

▲† Clark Constr. Co., 1919 Parish Ave., Owensboro, Ky., and L. G. Wasson Coal Mining Corp., Boonville, Ind., CA $4,247,020, overflow dam and power house on Walter F. George Proj., Chattahoochee River near Alabama and Georgia Boundary, ALABAMA-GEORGIA, U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Feb. 5. CD 2-9, under LB.

BUILDINGS—LB & CA

▲ Thompson-Polizzi Constr. Co., 298 Granello Ave., Coral Gables, Fla., CA $1,428,890, Ninety-Fifth St. SCHOOL, N. W. 95 St. and 18 Ave., MIAMI, FLA., Dade Co. Bd. Pr. Instruction, NW 2 St., Miami, Fla. Bids Dec. 7. CD 1-14.

▲ Farnsworth & Chambers Co., Inc., 3601 Brock St., Houston, Tex., CA Est. $6,500,000, 120,000,000 cu. ft. gas daily NATURAL GAS PROCESSING PLANT, Weeks Island Field, NORCO, LA., Shell Oil Co., Shell Bldg., Houston, Tex. CD 11-29-51, under La., New Orleans.

▲ G. E. Bass & Co., 2715 N. State St., Jackson, Miss., LB $3,687,033, est. $3,500,000, MENTAL HOSPITAL, MEMPHIS, TENN., State Bldg. Comn., Nashville, Tenn. CD 8-13.

MIDDLE WEST

BUILDINGS—BA

▲ Ill., Roxana—SCHOOL—BA 3/5—Community Unit School Dist. No. 1, Central School, 14th and Esther Sts., Rosewood Grade School addn., W. Rosedale, Rosedale Heights, Junior High School addn., Chaffer Ave. $1,400,000. Plans deposit $25 each unit. Wm. B. Ittner, Inc., 911 Locust St., St. Louis, 1, Mo., archt.-engr. CD 11-17.

▲ Ill., Elmhurst—SCHOOL—BA 3/23—School Dist. 46, 145 Arthur St., Elmhurst Junior High School, $1,250,000. Cone & Dornbusch, 100 N. LaSalle St., Chicago, Zone 1, archts. CD 10-2-57.

▲ Wis., Eau Claire—LIBRARY—BA 3/26—Wisconsin State Colleges Bldg. Corp., Madison, 2 story, 140 x 182 ft. library, $1,000,000. Plans deposit $25. Foeller, Schober, Berners, Safford & Johnson, 310 Pine St., Green Bay, archts. CD 10-31-57.

BUILDINGS—SLC

▲ Ill., Skokie—ADMINISTRATION AND RESEARCH—Teletype Corp., 1400 Wrightwood Ave., Chicago, soon lets contract 300,000 sq. ft. administration bldg. and research center, $3,000,000. Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, archts. CD 1-19.

HEAVY CONSTRUCTION—LB & CA

▲ MICHIGAN—State Hy. Dpt., Mason Bldg., Lansing.

Hertel-Deyo Co., 5205 Division S., Grand Rapids, Mich. and C. E. Utterbeck, Mt. Pleasant, Mich., CA $1,651,319, 4.1 mi. single 24 ft. concrete pavement east US 31 from US 16 north to Laketon Ave. and 1.4 mi. dual 24 ft. concrete pavement from Laketon Ave. north of Apple Ave., M 46. Bids Jan. 7. CD 2-13, under LB.

BUILDINGS—LB & CA

▲ Mercury Builders, Inc., 741 S. Harlem Ave., Forest Park, Ill., LB $1,423,871, (9 bidders), general contract, FIREMEN'S ACADEMY, CHICAGO, ILL., Dpt. Purchases, City Hall, Chicago, Ill. Bids Feb. 11. CD 1-27.

▲ Carl E. Erickson Co., 4657 N. Ravenswood Ave., Chicago, Ill., CA $2,000,000, 8 story brick WAREHOUSE, 4656 W. Kinzie St., CHICAGO, ILL., E. J. Roach & Sons Co., 4556 W. Kinzie St., Chicago, Ill. CD 8-26.

▲ Pearson Constr. Co., 6525 Lincoln, Detroit, Mich., CA Est. $1,000,000, 4 story, 24,000 sq. ft. floor space HOSPITAL WING, DETROIT, MICH., Jennings Memorial Hospital, 7815 E. Jefferson, Detroit, Mich. H. E. Beyster & Assocs., 700 Griswold Bldg., Detroit, Mich., archts.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ Colo., Denver—COLLEGE—BA 3/5—University of Denver, Campus, 3 story, 60,000-70,000 sq. ft. Law College Bldg., 14 and Banno Sts. $1,200,000. T. H. Buell & Co., 730 14 St. and Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., archts. CD 10-31.

▲ Tex., Austin—ELECTRIC POWER STATION—BA 3/9—City Hall, Holly Street Electric Power Station, $1,000,000. Plans deposit $200. CD 6-17.

▲ Minn., Waseca—SCHOOL—BA 3-11—Bd. Educ., North Elementary School and high school addn. $1,000,-

(Continued on page 64)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000, other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West

PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

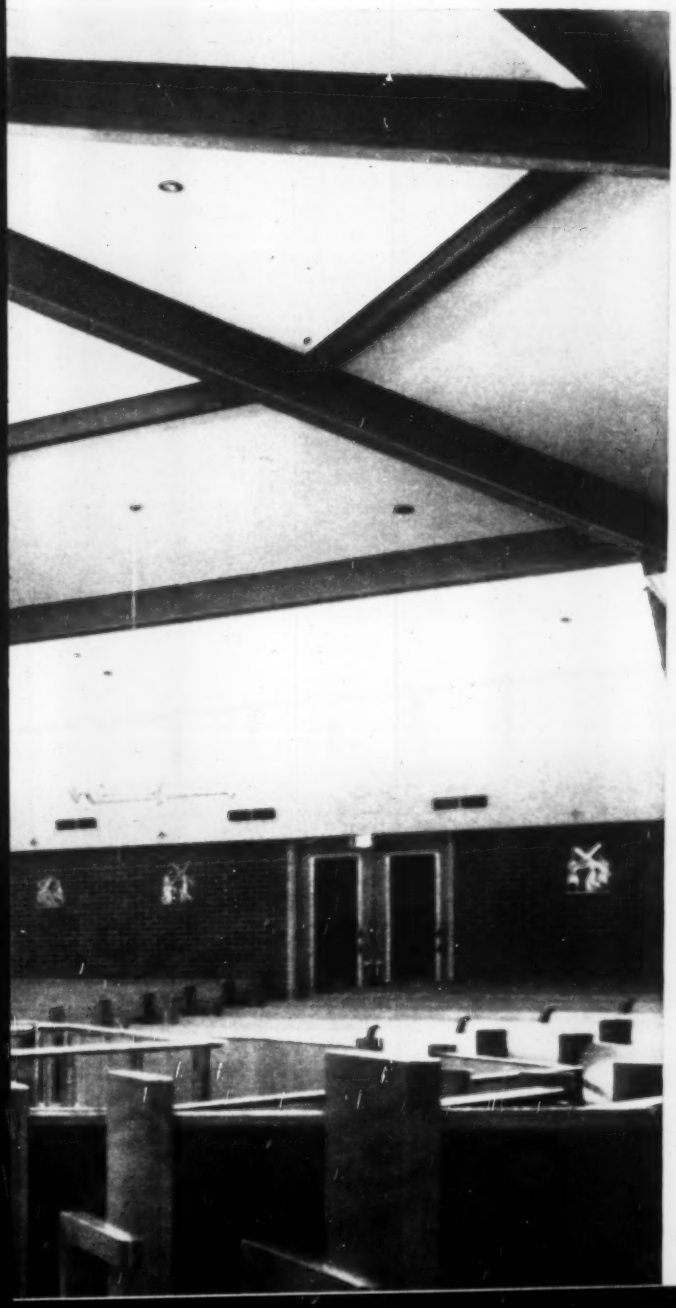
For additional reports see Construction Daily.

ST. JOHN'S CHURCH,
McLEAN, VIRGINIA

Architects: Francis L. Koenig,
combined with Soulé & Donnally
Structural Engineer: Edward J. Scullen & Assoc.
General Contractor: Burroughs & Preston
Structural Steel Fabricator: Southern Iron Works

Octagonal auditorium roof fabricated from USS Structural Steel makes a pleasing design. This shape permits maximum seating close to altar.

Church building costs reduced with USS Structural Steel



In the new St. John's Catholic Church at McLean, Virginia, USS Structural Steel permitted an unusual modern design, assured strength and safety, and resulted in low costs.

The building has an octagonal dome which meant that each steel member had to fit perfectly. Structural steel is easy to fabricate for this kind of job because it can be cut and welded with a minimum of labor and is especially suitable for arches and long roof spans. Where weight is a problem, the high-strength steels such as USS Man-Ten, Tri-Ten and Cor-Ten brands permit lighter construction without sacrifice of strength. These steels can be formed, welded or riveted in much the same manner as regular structural carbon steel.

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For your copy of "Hot Rolled Carbon Steel Shapes and Plates," a handbook containing details, dimensions and weights, write to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

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Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS

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JOB
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water problem and
estimate costs

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W. Palm Bch., Fla. • Hammond, Ind.

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(Continued from page 61)

000. Plans deposit $25 each. E. D. Corwin & Assocs., E. 818 First National Bank Bldg., St. Paul, archts. CD 4/21.

▲ Colo., Englewood—PLANT—BA 3/12—Garden Farm, Inc., Sealtest Foods Div. of National Dairy Products, East 60 Ave. and Albion, Denver, (selected list of bidders) 2 story, 42,000 sq. ft. dairy processing plant, $1,000,000, Extended date, Joe Lort, Jr., 211 Clayton, Denver, archt. Krey & Hunt, 292 Madison Ave., New York, N. Y., J. Rupert Fooks, 745 South Bryant, Denver, and Arthur F. Silver, 21 E. 46 St., New York, N. Y., engrs. CD 1/2.

▲† Okla., Fort Sill—HOUSING—BA 3/24—U. S. Eng., Box 61, Tulsa. 349 unit Capehart housing. Over $5,000,000. Extended date. CD 1/2.

▲ Tex., Corpus Christi—PLANT—Bids Asked—Coastal Products Co. (Sunray-Mid-Continent Oil Co. and Suntide Refining Co.) 907 S. Detroit St., Tulsa, Okla., 7,000 bbl. delayed coker plant, $3,000,000; area products lines, $90,000. CD 2/2.

HEAVY CONSTRUCTION—LB & CA

▲ KANSAS—State Hy. Comm., Kansas City, Kan.—J. A. Tobin Constr. Co., 3701 Rainbow Blvd., Kansas City, Kan., CA $1,090,940, concrete pavement, 1.984 mi., SP 40-105 F (064-1 (4), Wyandotte Co.; Kan.—Reno Constr. Co., Box 61, Overland Park, Kan., CA $690,159, grading 12.878 mi., SP 13-75 K 1014 (4), Pottawatomie Co. Bids Feb. 6. CD 2/13, under LB.

▲† Bauer-Smith Dredging Co., Inc., Box 88, Port Lavaca, Tex. CA $1,707,552, dredging Port Aransas Corpus Christi Waterway, Bay Section, Main Turning Basin and Tule Lake Channel, Corpus Christi, Nueces Co., ENG-41-243-59-41, TEXAS. U. S. Eng., Santa Fe Bldg., Galveston, Tex. Bids Feb. 3. CD 2/11, under LB.

▲ Texas Bitulithic Co., Box 1807, Fort Worth, Tex. CA $1,309,597 (combined work) 30 blocks downtown streets, widen streets, lower sidewalks, install storm sewers (widening 56 ft. and 70 ft. sewer pipe, 12 in. to 60 in.). ABILENE, TEX. City, City Hall, Abilene, Tex. Bids Feb. CD 2/11, under LB.

▲† Mittry Constr. Co., 2960 Marsh St., Los Angeles, Calif., LB $8,542,100, earth embankments and spillway excav., incl. over 3 mil. cu. yd. earth excav. and 150,000 cu. yd. rock excav.; 12,000,000 cu. yd. embankment; 330,000 cu. yd. rip rap, etc. Abiquiu Dam, Rio Chama, Inv. No. CIVENG-29-005-59-8. NEW MEXICO. U. S. Eng., P.O. Box 1538, Albuquerque, N. M. Bids Feb. 12. CD 1/27.

▲† H. B. Zachry Co., Constr. Div., P. O. Box 10188, San Antonio 21, Tex., LB $3,809,169, est. $4,109,100 (4 bidders). Strengthening runway and taxiway, apron operational alert, Walker Air Force Base, Inv. No. 29-005-59-97. ROSWELL, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 12. Bids Jan. 6 and Jan. 13 rejected. CD 2/2, under LB.

BUILDINGS—LB & CA

▲ Quamco, Inc., E-1901 First National Bank Bldg., St. Paul, Minn., CA $1,300,000, WAREHOUSE, FACTORY, SULPHURIC ACID PLANT, OFFICE, Pine Bend, near HASTINGS, MINN. North Star Chemicals, Inc., P. O. Box 28, South St. Paul, Minn. Titlestad Corp., 521 Fifth Ave., New York 17, N. Y., engrs.

▲ H. R. Bergstrom, P. O. Box 387, Marshall, Tex., LB $1,181,750, 4 and 2 story, 100,000 sq. ft. ENGINEERING BLDG., ARLINGTON, TEX. Arlington State College, Arlington, Tex. Bids Feb. 12. CD 12/24.

▲ Eitze-Kitchens Constr. Co., Box 3158, Austin, 13, Tex., LB $1,227,000 (11 bidders). Base Bid, STATE SCHOOL for Mentally Retarded Children, DENTON, TEX. Bd. for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., Austin, Tex. Bids Feb. 11. CD 2/3.

▲† H. A. Lott, Inc., Box 25005, Houston 5, Tex., and Box 809, Los Alamos, N. M., CA $1,167,599, POWER REACTOR TEST BLDG. and appurtenances, Inv. No. 291-59-4. LOS ALAMOS, N. M. Atomic Energy Comm., Chief of Contracts Div., Los Alamos Office, Los Alamos, N. M. Bids Jan. 29. CD 2/10, under LB.

FAR WEST

BUILDINGS—BA

▲† Calif., San Diego—HOUSING—BA 3/17—Dist. P. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., 947 unit Capehart housing in San Diego Area, Spec. 19581-59. $16,000,000. Hugh Gibbs, 441 E. 1st St., Long Beach, archt.

BUILDINGS—SLC

▲ Calif., Pacoima—HOSPITAL—Pacoima Memorial Lutheran Hospital, c/o Daniel, Mann, Johnson & Mendenhall, archts., 3325 Wilshire Blvd., Los Angeles, soon lets contract 2 and 3 story hospital bldgs. $1,500,000. CD 2/9.

HEAVY CONSTRUCTION—LB & CA

▲† B-E-C-K Constructors; McLaughlin, Inc., Raber Kief, Inc., and Morrison Knudsen Co., Inc., 1647 Stone Way, Seattle 3, Wash. CA $8,682,451, communications and operations facility bldg., incl. composite bldg., auto maintenance and installation shop. Bldg. Phase 111, Shemya Air Force Project, Inv. 59-42-1, SHEMYA, ALASKA. U. S. Eng., P. O. Box 7002, Anchorage, Alaska. Bids Feb. 5. CD 2/11, under LB.

▲† Clyde W. Woods & Son, Inc., 6900 Tujunga Ave., North Hollywood, Calif., LB $2,227,438 (8 bidders) channel imprvs., bridge constr., Santa Ana River Basin, San Antonio and Chino Creeks, Chino to Ramona Aves., ENG-04-353-59-21, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 11. CD 1/14.

▲† Robinson & Wilson, 179 4th St., San Bernardino, Calif., CA $1,721,188, G/M vehicle assembly bldg. (Proj. Sentry), Vandenberg Air Force Base, ENG-04-353-59-36, LOMPOC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 4. CD 2/16, under LB.

BUILDINGS—LB & CA

▲† Chris Berg, Inc., 2730 Westlake Ave. N., Seattle, Wash., CA $2,861,000, 50 bed HOSPITAL and HOUSING, KOTZEBUE, ALASKA. Dpt. Health, Education & Welfare, 4 and Independence Ave. S.W., Wash., D. C. Bids Jan. 27. CD 2/4, under LB.

▲ Larwin Co., 8692 Wilshire Blvd., Beverly Hills, Calif., Owner Builds, $1,209,937, 108 stucco DWELLINGS, Ball and Cerritos Sts., Tr. 3109, BUENA PARK, CALIF.

▲ Herbert Goldsworthy, 409 Santa Monica Blvd., Santa Monica, Calif., CA $1,984,000, LIBRARY, CAFETERIA and PHYSICAL EDUC. BLDGS., Santa Monica City College, SANTA MONICA, CALIF. Santa Monica Unified School Dist., 1723 4th St., Santa Monica, Calif. Bids Feb. 9, awarded Feb. 10. CD 2/12, under LB.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ Canadian Bridge Co. Ltd., 1219 Walker Rd., Walkerville, Ont., LB $2,123,181 (19 bidders), superstructure covering drift span, Section 3, Champlain Bridge over Nuns' Island, MONTREAL, QUE. National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont. Dr. P. L. Pratley, 1117 St. Catherine St. W., Montreal, Que., engr. Bids Feb. 12. CD 1/15.

BUILDINGS—LB & CA

▲ Neo Constr., Inc., 10 rue de l'Eglise, Dorval, Que., Owner Builds, $2,625,000, 175 unit HOUSING, new streets, Ste. Genevieve Acres, STE. GENEVIEVE, QUE. Emilien Bijold, 6746 Molson St., Montreal, Que., archt.

U. S. POSSESSIONS

BUILDINGS—BA

▲† Guam—HOUSING—BA 3/4—Naval Forces Marianas, 14 Naval Dist., Navy No. 128, San Francisco, Calif., U.S.A., 220 unit Capehart Housing. Extended date. Benedict, Beckler & Assocs., 3501 Calhuenga Blvd., Los Angeles, Calif., U.S.A., archts. CD 2/2.

PROPOSED PROJECTS

WATER SUPPLY

▲ Wis., Glendale—City, City Hall, water distr., sys. $2,196,500. Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, Ill., consult. engrs. H. C. Webster & Son, 1750 W. Silver Spring Rd., Milwaukee, engrs.

SEWERS, WASTE DISPOSAL

▲ Conn., Stamford—City, City Hall, sewer line connecting New High School Site to existing lines at Bull's Head, $350,000. Bids 1959; sewers, various locations, Glenbrook and Belltown areas, $2,015,000. Bids 1960; sewers, Northwest area, $1,570,000. Bids 1960; sewers, Northeast Area, west of Hope St., $733,000. Bids 1960; trunk line sewer, from Washington Ave. at Woodcote St. along Toilsome Brook past New High School and Newfield School to proposed Vine St. Junior High School, $1,900,000; sewers, Southwest Area, $928,000. CD 8/2/54.

▲ Ill., Chicago—Dpt. Purchases, City Hall, Zone 2.
1.18 mi. 36- to 84-in. concrete, Ardmore Ave. storm sewer, $550,000.
7 ft. monolithic, 60 in. concrete pipe 1.16 mi. Beverly-Calumet combined sewer, Cont. 2D, $800,000.
1/2 mi. 54- to 72-in. concrete pipe, Kostner Ave. sys. combined sewer, Cont. 3C, $200,000.
16 ft. monolithic open cut, Laflin St. combined sewer, $1,300,000.
1.2 mi. open cut, 191/2 x 213/4 ft., 41/2 in. Leamington Ave. combined sewer, Cont. 1D, $2,000,000.
replace existing sys. 36- to 48-in. concrete pipe 1/4 mi. Loop combined sewer, $500,000, all foregoing bids in Spring.
monolithic open cut, 123/4 x 16 ft. North side combined sewer, $1,000,000.
111/2 x 923/4 monolithic concrete and 60 in. reln.-con. pipe 1.61 mi. Union Ave. combined sewer, $1,900,000. Bids in April. N. C. Eilers, 320 N. Clark St., Zone 10, engr.

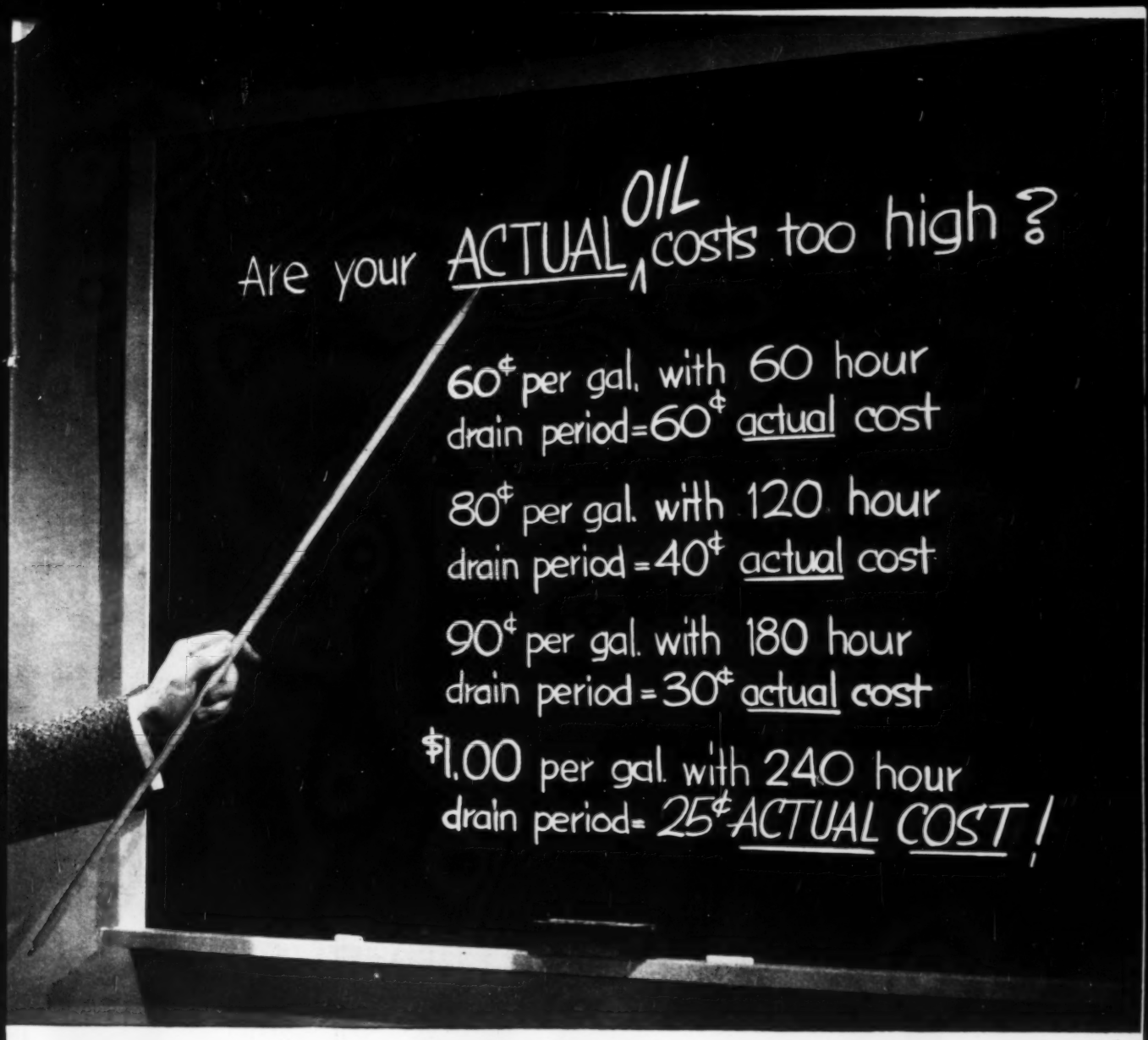
▲ N. J., Edison (Nixon P. O.)—Twp. of Edison, Twp. Hall, trunk sewer through Menlo Park area, $1,500,000.

▲ N. C., Asheboro—City, City Hall, voted bonds, Jan. 29, sewage treatment plant, sewer lines, $1,995,000. Platt & Davis, 111 Corcoran St., Durham, consult. engrs. CD 1/13.

▲ N. C., High Point—City, City Hall, sewage treatment plant, addn., outfall sewers, $2,100,000. William F. Freeman, Inc., 116 E. Commerce St., consult. engr. Bids about December.

▲ O., Dayton—Comrs. Montgomery Co. Court House, Stillwater Drainage Sewer Dist., covering 9,450 acres, embracing portions of Harrison, Randolph and Butler Twps., to incl. 48 in. interceptor sewer extending to Rte. 40, tying in with an extension from Englewood, Shiloh. Over $2,000,000. CD 10/22/52.

(Continued on page 66)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(Continued from page 64)

BRIDGES

▲ QUEBEC—Dpt. P. Wks., Parliament Bldgs., Quebec City, Shawinigan—785 ft. bridge over St. Maurice River, two 133 ft. and three 174 ft. spans, 44 ft. roadway, two sidewalks. $1,500,000. CD 11/15/56, under Que., Shawinigan Falls.

STREETS AND ROADS

▲ Tex., Kountze—Hardin Co., Courthouse, road work. $1,500,000.

EARTHWORK, WATERWAYS

▲ Calif., Redondo Beach—City, City Hall, $9,000,000 bond election Apr. 14; harbor imprvs. CD 12/20/45.

AIRPORTS

▲† Ark., Blytheville—NIKE HERCULES MISSILE BATTERY—U. S. Eng., P. O. Box 867, Little Rock, plans by Sverdrup & Parcel Engineering Co., consult. engrs.-archts., 1134 Locust St., St. Louis, Mo.; Nike Hercules Missile Battery, Manilla, for Blytheville Air Force Base. $2,000,000-$3,000,000. CD 9/12.

▲† Ark., Cabot—NIKE HERCULES MISSILE BATTERY—U. S. Eng., P. O. Box 867, Little Rock, plans by Erhart, Eichenbaum, Rauch & Blass, consult. engrs.-archts., 201 Chester, Little Rock; Nike Hercules Missile Battery. $2,000,000-$3,000,000. CD 1/21.

▲† Ark., Conway—NIKE HERCULES MISSILE BATTERY—U. S. Eng., P. O. Box 867, Little Rock, plans by Ginocchio, Cromwell & Assocs., consult. engrs.-archts., 416 Center, Little Rock; Nike Hercules Missile Battery. $2,000,000-$3,000,000. CD 1/21.

▲† Minn., Duluth—BOMARC MISSILE BASE—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul; Bomarc Missile Base, North Shore, Lake Superior, 4 mi. northeast of here. $6,300,000. Ellerbe & Co., 333 Sibley St., St. Paul, consult. engrs. Bids in April. CD 9/8.

FOREIGN

▲ England, London—HOTEL—Owner, c/o Louis Epstein, Max Bell, George Gardiner and F. Ronald Graham, Jr., Ben Orenstein, Seaway Hotels, Toronto, Ont., plans by Fitzroy Robinson, London, England, 264 bedroom hotel at London Airport to be called "Skyways Hotel". $3,000,000.

PUBLIC BUILDINGS

▲ Ark., Fayetteville—HOSPITAL—Washington Co., Court House, plans by Paul Young, Jr., McIlroy Bank Bldg., 3 story, and second floor over present 1 story bldg. for Washington Co. Hospital. $1,500,000.

▲ Conn., Stamford—SCHOOL—Town, Town Hall, Junior High School, Roxbury area. $3,100,000.

▲ Ill., Danville—SCHOOLS—Bd. Educ., 202 E. Fairchild St., bond election Mar. 7, three Junior High Schools. $4,000,000.

▲ Ind., Auburn—HOSPITAL—Comrs. DeKalb Co., Courthouse, 60-bed County Hospital. $1,500,000.

▲ Ind., South Bend—APARTMENTS—South Bend Housing Auth., 624 W. Western Ave., plans by Andrew A. Toth, 2158 Portage St., seventeen 2 story, brick, apartments, 6 story, 60 x 285 ft. reinf.-con. apartment. $2,520,000. Jas. A. McCarthy & Assocs., St. Joseph Bank Bldg., structural engrs.; Tenkonohy & Collins, 1610 Mishawaka Ave., mechanical engrs.

▲ Mass., Framingham—HOSPITAL IMPRVS.—Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg. Constr., 18 Chauncy St., Boston, plans by Desmond & Lord, 6 Beacon St., Boston; Proj. M-729. Contr. 7, renovate Cushing Hospital. $1,500,000. Constr. 1959.

▲ Mich., Detroit—SCIENCE—State Bd. Educ., Capitol Bldg., Lansing, plans by Albert Kahn Assoc. Archts. & Engrs., Inc., 345 New Center Bldg., Detroit, Mich., 60x160 ft. frame reinf.-con. science bldg., Wayne State University. $1,500,000.

▲ Neb., Omaha—SCHOOL—School Dist. 66, 8727 Shamrock Rd., plans by Leo A. Daly Co., 633 Insurance Bldg., Westbrook Junior High. $2,000,000.

▲ N. Y., Bohemia—SCHOOL—Bd. Educ. plans by Carl B. Stove, 52 Main St., Sayville, elementary school. $1,500,000. Bids in April.

▲ N. Y., Oceanside—SCHOOLS—Bd. Educ., referendum vote Mar. 3, Elementary-Junior High School, $3,000,000; Knappe & Johnson, 2110 Northern Blvd., Manhasset, N. Y., archts.; 3 elementary school addns., $500,000; Andrew Fritz, 241 Sunrise Highway, Rockville Center, archt.

▲ O., Cincinnati—FIELD HOUSE—City, City Hall, plans by James E. Allan, consult. engr.-archt., 3307 Clifton Ave., 2 and 4 story, brick, concrete field house addn., University of Cincinnati. $2,000,000. CD 11/5/54.

▲ O., Independence—SCHOOL—Bd. Educ., 6565 Brecksville Rd., plans by Ward, Conrad, Schneider & Szabo, Hanna Bldg., Cleveland, Zone 15, high school. $1,550,000.

▲ O., Orrville—POWER PLANT—City, City Hall, power plant expansion, 22,000 kw turbo generator, increase power facilities. $1,550,000. Constr. 1959.

▲ O., Vermilion—SCHOOLS—Vermilion Local School Dist., bond election May 5, elementary school and high school addn., $1,340,000; Ward, Conrad, Conrad & Szabo, Hanna Bldg., Cleveland, Zone 15, archts., elementary school; Outcalt Guenther & Assoc., 13124 Shaker Sq., Cleveland, 20, O., archt., high school; high school addn. $450,000, swimming pool at high school, $150,000; Outcalt Guenther & Assoc., 13124 Shaker Sq., Cleveland, Zone 20, archts. CD 1/15.

▲ Pa., Phila.—HOUSING—Phila. Housing Auth., 42 S. 15th St., plans by Louis Kahn, 20th and Walnut Sts., Mill Creek Low Cost Housing (160 unit exten.) 46th St. and Fairmount Ave. $1,500,000. Keast & Hood, 1201 Chestnut St., engrs. CD 6/20.

▲ Tenn., Clarksville—COLLEGE BUILDINGS—State of Tennessee, Nashville; Austin Peary State College classrooms, auditorium, dormitory. $1,500,000.

▲ Tex., Houston—SCHOOL—East & Mount Houston Ind. School Dist., Box 600, defeated $1,350,000 bonds Jan. 10; Junior High School and school addns. CD 12/22.

▲ Utah, Spanish Fork—SCHOOL—Nebo School Dist., Spanish Fork; plans by Ashworth Architects, Box 566, Provo; Senior High School. $1,500,000.

▲ Va., Fairfax—SCHOOLS—Fairfax County Bd. Educ., Fairfax, Intermediate School No. 1 near Kirby's Corner. $1,200,000.
Intermediate School No. 2, off Arlington Blvd. west of Graham Rd. $1,200,000.
Intermediate School No. 3, Columbia Pike, Bailey's Cross Rds. $1,200,000.
Intermediate School No. 4, off Braddock Rd. east of Back Lick Rd. $1,200,000.
Intermediate School No. 5, intersection U.S. Hy. 50 and Jermantown Rd. $1,200,000.
Intermediate School No. 6, Franconia Rd. near Rte. 714 (Norton Rd.). $1,200,000.
Intermediate School No. 7, west of Fort Hunt Rd., off Rte. 626. $1,200,000.
Intermediate School No. 8, off Lawyer's Rd., Vienna. $1,200,000.
Intermediate School No. 9, Franconia Rd. west of Accotink Creek. $1,200,000.
4 Intermediate Schools, Nos. 10, 11, 12 and 13. $4,509,500.
High school between Annandale and Fairfax between Rte. 236 and Braddoc Rd. west of Circumferential Hy. $2,500,000.
high school near Lewinsville. $2,325,000.
high school Franconia Area, Franconia Rd. and Rte. 613. $2,325,000.
central warehouse, Jermantown Rd. School for School Bd. Purch. Div. and Electoral Bd. $399,000. (5 year Capital Imprvt. Program). CD 11/11/55.

▲ † Wash., Oak Harbor—HOUSING—P. Wks. Officer, Thirteenth Naval Dist., Naval Station, Seattle, 550 unit Capehart housing, Whidbey Island Naval Air Station. $5,500,000. Bids to be asked by Spring.

▲ W. Va., Charleston—SCHOOL—Bd. Educ., Kanawha Co., $15,000,000 bond election Mar. 30, school construction. CD 12/3/51.

COMMERCIAL BUILDINGS

▲ Calif., Monterey—HOSPITAL—Peninsula Community Hospital, State Hy., plans by Edward D. Stone, 38 E. 65th St., New York, N. Y., 100 bed hospital, 20 acre site. $2,000,000. CD 3/28/56.

▲ Conn., Thompsonville—HOUSES—Meadow Gardens, Elm St. 138 houses, "Meadow Gardens", Elm St. $1,642,000.

▲ Ill., Barrington—MOTEL—Owner, c/o Tuchschmidt & Assocs., archts., 30 N. LaSalle St., Chicago; 515 unit Galaxy Motorama Motel, 2 swimming pools, golf course, shopping center, 1,000 seat restaurant on 188 acres between Rtes. 25 and 50 on Higgins Rd. $8,000,000. Bids about June 15.

▲ Iowa, Marshalltown—HOSPITAL—Mercy Hospital, plans by Leo A. Daly Co., Insurance Exchange Bldg., Omaha, Neb., 3 story, 69-bed main hospital addn., $1,250,000; 1 story, 24-bed psychiatric unit, heating, kitchen and laundry facilities, $645,000. CD 7/1/57.

▲ La., New Orleans—APARTMENT—L. P. Smith, 3141 DeSaix Blvd., plans by Colvert & Lowery & Assn., 809 Chartres St., 1,420 unit apartment community, "Victory Drive Plaza", 71 acres, Algiers. $25,000,000.

▲ Minn., St. Paul—OFFICE—St. Paul Fire & Marine Insurance Co., 111 West Fifth St., plans by Childs & Smith, 20 North Wacker Dr., Chicago, Ill., 5 story, 411,602 sq. ft. office between 5th and 6th Sts., Washington Ave. $5,000,000. Constr. next April.

▲ Mo., Creve Coeur (St. Louis 24 P. O.)—SYNAGOGUE, etc.—Temple Israel's Congregation, 5017 Washington Blvd., St. Louis, Zone 8, plans by Hellmuth, Obata & Kassabaum, 315 N. 10th St., St. Louis, Zone 1, synagogue, religious school and chapel; Ladue and Spoede Rds. $2,100,000. CD 8/7/56.

▲ Mo., Town and County (St. Louis 24 P. O.)—SCHOOL—Order of Visitation, Visitation Academy, 5448 Cabanne Ave., St. Louis, Zone 12, plans by Bernard F. McMahon, 111 S. Meramec Ave., Clayton, Zone 5, 530-student school, chapel, etc. on 26-acre site southeast corner US 40 and Ballas Rd. Over $1,500,000. CD 11/10.

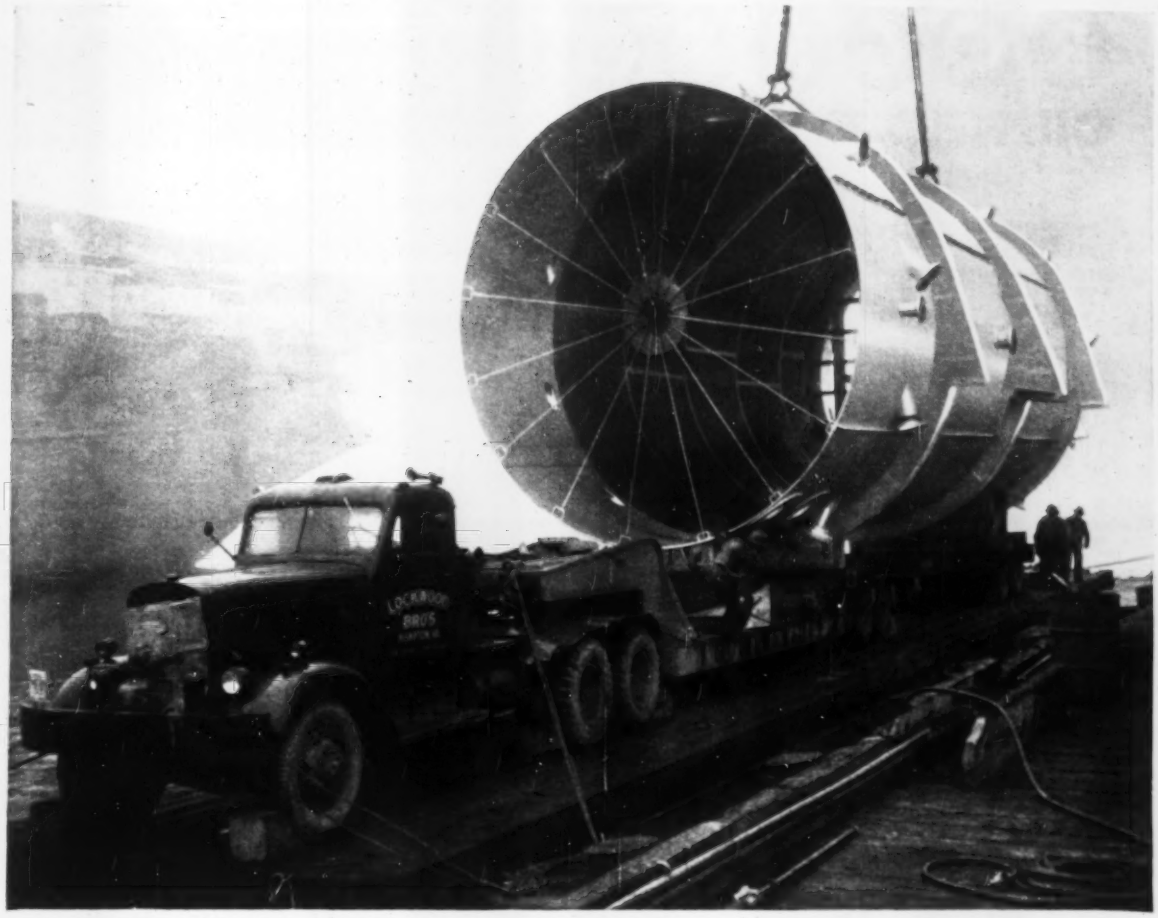
▲ N. Y., Albany—OFFICE—Samfred Belt Line Corp., 45 Colvin Ave., Albany, plans by Jules Taus, Glenmont, N. Y., 7 story, steel frame, concrete floors and tile covering office. $1,600,000.

▲ N. Y., Brooklyn—APARTMENT—Murdock Constr. Corp., 158 Irving Pl., Woodmere, plans by S. J. Kessler & Sons, 551 Fifth Ave., New York, Zone 17, 12 story apartment for 189 families, incl. 40 car garage, 2650 Ocean Parkway. $1,500,000.

▲ N. Y., New York—OFFICE—Galbreath-Ruffin Realty Co., Inc., 150 E. 42nd St., Zone 17, plans by Harrison & Abramovitz, 630 Fifth Ave., Zone 20, 41 story office, eastside of 3rd Ave. between East 40th and East 41 Sts. $4,000,000.

▲ N. Y., New York—ENGINEERING CENTER—Manhattan College, Spuyten Duyvil Parkway and W. 242nd

(Continued on page 68)



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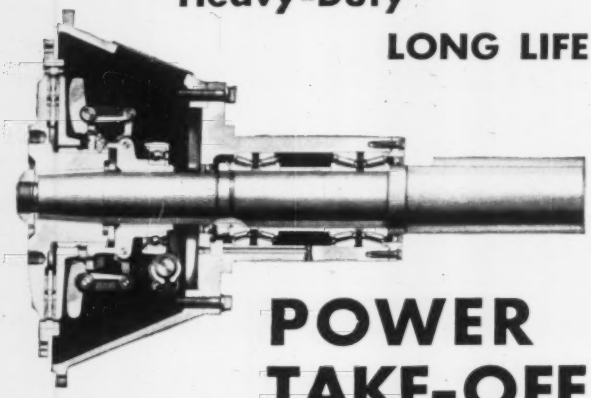

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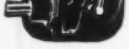
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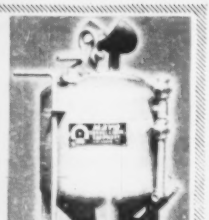

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(Continued from page 66)

Sts., Zone 63, plans by Eggers & Higgins, 787 United Nations Plaza, 6 story and 4 story, glass, enameled aluminum and brick. Engineering Center, Waldo Ave., Manhattan College Parkway, $5,000,000. CD 2/15/58.

▲ N. Y., Tarrytown—INN—Hilton Hotels Corp., 401 Seventh Ave., New York, Zone 1, plans by William B. Tabler, 401 Seventh Ave., New York, 200 room Hilton Inn on 10 acre, Broadway and Thruway, Exit No. 9, $2,000,000. CD 12/10.

▲ N. C., Charlotte—MERCHANDISE MART—Charlotte Merchandise Mart, 2616 Independence Blvd., 4 story, 225,000 sq. ft. merchandise mart, $2,500,000.

▲ N. D., Fargo — CONVENT AND ACADEMY — Sisters of Presentation of Blessed Virgin Mary, 1310 Broadway, plans by Kurke & Assocs., 1117 13th Ave. N., Sacred Heart Convent and Academy, $1,500,000. CD 8/13/57.

▲ O., Cleveland—OFFICE TOWERS—Commerce Plaza, Inc., c/o Albert Levin, Marshall Bldg., Zone 13, twin 12 story, 240,000 sq. ft., glass, aluminum office towers, southeast corner Chester and E. 30th St., $8,000,000. H. L. Vokes Co., 1000 Wayside Rd., Zone 10, consult. engr.

▲ Ore., Newberg—RETIREMENT HOME—Friendsview Manor Corp., 1513 N.E. 58 Ave., Portland, plans by Donald Lingren, 9001 Beacon Ave., Vancouver, Wash., retirement home, $1,500,000. Constr. in September.

▲ Pa., Clifton Heights—SHOPPING CENTER—Owner, c/o Thalheimer & Weitz, archts., 1325 Walnut St., Phila., Oak Park Shopping Center, Baltimore Pike, $2,500,000.

▲ Pa., Narberth—APARTMENTS—Gorchov Bros., 284 Montgomery Ave., Bala Cynwyd, plans by Budd Ross, 5409 Market St., Phila., 6 story, 180 unit apartment, Wynnewood Rd., $1,800,000. CD 10/17/57.

▲ Tenn., Memphis — SHOPPING CENTER — Laurelwood Shopping Center, Inc., c/o Everett D. Woods & Assocs., archts., 212 Adams Ave., 200,000 sq. ft. shopping center, $3,500,000.

▲ Tex., Dallas—RETAIL STORES, etc.—The Pig Town Co., (Gerri Von Frellick), Samuell Blvd., 300,000 sq. ft. masonry, retail stores $3,000,000, 200-room hotel $5,000,000, professional $2,750,000, bowling center $400,000, East Dallas area "City of Shops" zone.

▲ Tex., Houston — CLINIC, etc. — Baylor University, College of Medicine, 1200 M. D. Anderson Blvd. and 2310 Baldwin St., plans by John Freeman, Jr. & Kenneth E. Bentsen, 1700 S. Main St., clinic $1,000,000, basic science research $2,000,000, clinical research $1,500,000. Texas Medical Center. CD 2/4.

▲ Utah, Provo—STUDENT UNION—Brigham Young University, Provo, student union bldg., $4,000,000. CD 12/11/57, under Latter Day Saints Church, as owner.

▲ Utah, Salt Lake City—HOME SUBDIVISION—Capson Investment Co., 331 E. 4th S., 178 home subdivision, split-level homes located 4200 South and Redwood Rd., $8,000,000. Alvin L. Mason, 2729 Highland Dr., consult. engr.

▲ Que., Montreal—OFFICE—Dorchester-University Holdings Ltd., c/o The Royal Trust Co., 105 St. James St. W., plans by Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St. W., 32 story office, University and Dorchester Sts., $2,000,000.

INDUSTRIAL BUILDINGS

▲ Conn., Old Saybrook—PLANT—Reuben H. Donnelly Corp., 305 E. 45 St., New York, N. Y., printing plant, School House Lane, $2,000,000.

▲ Idaho, Pocatello—PLANT—J. R. Simplot Co., Bank of Idaho Bldg., Boise, sulphuric acid plant, $1,500,000.

▲ Ind., Mitchell—PLANT—Lehigh Portland Cement Co., cement plant addns. (5 year program), $15,000,000.

▲ Md., Gaithersburg—PLANT—National Publishing Co., 101 N. St. N.E., Wash., D. C., plans by Charles T. Main, Inc., 80 Federal St., Boston, Mass., plant Rockville Pike, $2,500,000. CD 8/3/54, under Md., Rockville.

▲ O., Lima—PLANT—Standard Oil Co. of Ohio, Midland Bldg., Cleveland, Zone 15, plant for production of acrylonitrile, $2,000,000.

▲ Tex., McCamey—PLANT—Shell Oil Co., Shell Bldg., Houston, gas processing plant, 4 mi. west of here, $2,000,000.

▲ B. C., Vancouver—WAREHOUSE, etc.—B. C. Telephone Co., 700 Seymour St., plans by Robert C. Bennet & Assocs., 1933 W. Broadway, 360,000 sq. ft. concrete block, glass purchasing, warehousing and repair shop, 30,000 sq. ft. offices, Manitoba and Marine Sts., $3,000,000.

UNCLASSIFIED

▲ Calif., Ignacio—MEMORIAL PARK, etc.—Lindberg, Armet & Davis, 2440 W. 3rd St., Los Angeles, and Troutdale Constr. Co., 650 N. Sepulveda Blvd., West Los Angeles, Memorial Park and cemetery, Loma Verde, on 205 acre site near here, museum, admin. bldg., amphitheater, crypts, crematorium, gravevards, etc., $16,000,000.

▲ Ill., Rockford — MODERNIZING FAIR GROUNDS — Rockford Park Dist., 813 N. Main St., modernizing fair grounds, constr. 10th Ave. swimming pools, shelter houses, paving, lighting, steel bleachers, $1,500,000.

▲ Oklahoma—TRANSMISSION LINE—Northern Oklahoma Gas Co., Ponca City, 75 mi. 12 in. natural gas transmission line, near Cherokee to Ponca City, $2,500,000. L. A. Farmer, Ponca City, staff engr.

to cooling: a solution

By trunk or by tower, evaporative cooling has proved its practicability. Contributing to the effectiveness of this method of industrial cooling is the Peerless vertical industrial service pump. Efficient, versatile and economical, the Peerless vertical pump offers optimum performance in all ranges, plus these *extra value* Peerless features: *unitized pump-motor manufacture*, for perfect alignment, increased pump durability; *improved suction manifolding* for better water intake, less friction; *advanced vertical turbine design* for highest efficiency, maximum performance; *designed-in flexibility* of a modern pump, for easy adaptation for future system requirements.

PEERLESS PUMPS

WRITE FOR ILLUSTRATED BULLETIN NO. B-505

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Peerless Pump Division

Plants: LOS ANGELES 31, CALIFORNIA and INDIANAPOLIS 8, INDIANA

Offices: New York; Cleveland; Atlanta; St. Louis; Phoenix; San Francisco; Chicago; Fresno; Los Angeles; Plainview and Lubbock, Texas; Albuquerque. Distributors in Principal Cities. Consult your telephone directory.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 3 Massachusetts

STREETS AND ROADS

March 3 Massachusetts March 6, 13, 18 Vermont

BUILDINGS—LB & CA

▲ John Bowen Co., 173 Boston St., Dorchester, Mass., LB $2,108,000, Contr. No. 569-289 Donnelly Field SCHOOL, East Cambridge, CAMBRIDGE, MASS. City Hall, Cambridge, Mass. Bids Feb. 17. CD 1/21.

▲ Nathan Gatter, 75 Pratt St., Hartford, Conn., Owner Builds, $2,000,000, 200 HOUSES, Colchester Center, COLCHESTER, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ Pa., Hollidaysburg—BA 3/18—Hollidaysburg Sewer Auth., Municipal Bldg., Contr. 1, sewage treatment plant, general constr.; Contr. No. 2, electrical work; Contr. No. 3A, Brush Run Pumping Station and Sewer; and Contr. 4, Gaysport Area Sewers. Plans deposit $60. Chester Engineers, 601 Suismon St., Pittsburgh, Zone 12, engrs.

▲ N. Y., Lockport—BA 4/2—Bd. Supervs. Niagara Co., Court House, water distr. sys. $10,000,000.

BUILDINGS—BA

▲† Md., Annapolis—BANCROFT HALL—BA 3/25—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., addnl. wings Bancroft Hall (Wings 7 and 8), Naval Academy. Over $1,000,000. CD 11/17/47.

BUILDINGS—SLC

▲ Del., Wilmington—HOME for AGED—Peninsula Conference of the Methodist Church, 1213 Delaware Ave., soon lets contract Home for Aged, $2,000,000. Dollar, Bonner, Blake & Manning, 1103 Jefferson St., archts.; Louis H. Doane, Penna R. R. Bldg., engr. CD 1/30.

HEAVY CONSTRUCTION—LB & CA

▲ Andrew Catapano & Co., 88-43 76th Ave., Glendale, N. Y., CA $7,156,000, Contr. No. 2C, Kent Ave. Intercepting Sewer, Franklin St. and Kent Ave. for Newtown Creek Pollution Control Project, Brooklyn Boro, BROOKLYN, N. Y., Dpt. P. Wks., Rm. 2300, Municipal Bldg., New York 7, N. Y. Bids Jan. 16. CD 1/20; under LB.

▲ McLean Contg. Co., Fidelity Bldg., Baltimore, Md., CA $2,286,196, double leaf bascule, rein.-con. on steel bearing piles Bear Creek Bridge II and overpass on Peninsular Hy., between Dundalk and Sparrows Point, Contr. SR-1, TOWSON, MD., Baltimore Co. Revenue Auth., 300 County Office Bldg., Towson 4, Md. Bids Feb. 2. (Correction—owner). CD 2/9, under LB; Maryland.

BUILDINGS—LB & CA

▲ Robert Schmertz, 210 East St., Lakewood, N. J., Dam Forces, $5,000,000-$6,000,000, 600 HOUSES, Dover Rd., Dover Twp., TOMS RIVER, N. J.

▲ Lauter Constr. Co., 112 S. 16th St., Phila., Pa., CA Over $2,500,000, 2 story, 320,000 sq. ft., masonry, structural steel, rein.-con. WAREHOUSE (addn. to Bldg. 68), CHESTER, PA., Scott Paper Co., foot of Market St., Chester, Pa. Bids Feb. 10. CD 1/22.

▲ Joseph R. Farrell, Inc., 144 Cedar Ave., West Conshohocken, Pa., LB $1,989,966, general constr. women's DORMITORIES, sanitary and storm drainage sys., PHILA., PA., University of Pennsylvania, 3025 Walnut St., Phila., Pa. Bids Feb. 11. CD 2/3.

▲ William P. Lipscomb Constr. Co., Washington Bldg., Wash., D. C., CA $3,000,000, 8 story OFFICE, WASH., D. C., American Chemical Society, 16 and M Sts. N.W., Wash., D. C. Bids Jan. 6. CD 1/12, under LB.

SOUTH

BUILDINGS—BA

▲ Fla., Miami—SCHOOL—BA 3/18—Dade Co. Bd. P. Instruction, Admin. Bldg., 275 NW 2 St., Miami Beach Senior High School, Prairie Ave., and Dade Blvd., Miami Beach. Plans deposit $100. Pancoast, Ferendino, Skeels & Burnham, 2575 S. Bayshore Dr., archts. Oboler & Clarke, 927 Arthur Godfrey Rd., Miami Beach, structural engrs.; Sassett Engineering Co., DuPont Plaza Center, mech. engr. CD 2/16.

HEAVY CONSTRUCTION—LB & CA

▲ FLORIDA—State Rd. Dpt., Tallahassee.

B. B. McCormick & Sons, Inc., Box 248, Jacksonville Beach, Fla., CA $1,841,796, b. conc. surf. course and binder course, 64y limerock base, shoulder surf. tr. 2.030 mi. SR 8 FAI Proj. No. 1-10-5 (12) 336 Job No. 72270-3402, Duval Co. Bids Dec. 16, awarded Feb. 13. CD 12/19, under LB.

▲ Hallmac Constr. Co., 3701 Buffalo Dr., Houston, Tex., CA Est. $1,960,000, 43 mi. 30 in. natural gas pipe line, Lake Pontchartrain, La. to Kiln, Miss., LOUISIANA-MISSISSIPPI, United Gas Pipeline Co., Box 1407, Shreveport, La. CD 4/22, under Louisiana, Mississippi-Alabama.

▲ Houston Contg. Co., 2807 Buffalo Speedway, Houston, Tex., CA Est. $3,680,000, natural gas looping lines, 50 mi. 30 in. near Alexandria, La., 24 mi. 30 in. near Bastrop, La., 9 mi. 30 in. near Greenville, Miss. and 9 mi. 30 in. near Clarksdale, Miss., LOUISIANA-MISSISSIPPI, Texas Gas Transmission Corp., 416 W. 3rd St., Owensboro, Ky. CD 2/23/54.

BUILDINGS—LB & CA

▲ Beers Constr. Co., 70 Ellis St. N.E., Atlanta, Ga., LB $4,196,000, North Avenue Branch BANK, ATLANTA, GA., First National Bank, Marietta and Peachtree Sts., Atlanta, Ga. Bids Feb. 6. CD 1/7; Daniel Constr. Co., Box 1511, Birmingham, Ala., LB $4,196,000 (identical bid) North Avenue Branch Bank, (Atlanta, Ga.).

▲ Cooper Constr., Co., Box 5795, Jacksonville, Fla., CA $2,064,500, Glen Oaks HIGH SCHOOL, Cedar Grove Dr., incl. cinder track, lighting for football field bleachers, etc., BATON ROUGE, LA., East Baton Rouge Parish School Bd., 805 St. Louis St., Baton Rouge, La. Bids Feb. 5. CD 2/10, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

March 4, 25 Michigan

▲† Wis., Kansasville—AIR BASE IMPRVS.—BA 3/5—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill.; WW and sewage treatment plant, Richard I. Bong Air Force Base. $1,500,000. J. B. W. Corey, ch. engr. CD 9/9.

▲ O., Akron—AIRPORT TERMINAL—BA 3/12—Comrs. Summit Co., Courthouse, airport terminal, Akron-Canton Airport near Greensburg. $2,350,000. Plans deposit $150. Konarski & Chambers, 844 W. Market St., Zone 3, archts. F. W. Stafford, 888 Home Ave., Zone 10, engr. CD 7/31/57.

HEAVY CONSTRUCTION—LB & CA

▲ Hunkin-Conkey Constr. Co., 1740 E. 12th St., Cleveland, O., CA $3,194,216, sewage disposal plant, pumping station and force main, S. Main extension, WARREN, O. Bd. Control, City Hall, Warren, O. Bids Jan. 16. CD 2/4, under LB.

BUILDINGS—LB & CA

▲ Fred Ross Constr. Co., 11511 Springfield Rd., Cincinnati, O., Owner Builds, $4,000,000, 250-1 floor-basmnt. HOMES, Kemper Rd., CINCINNATI, O. Miami Engineering Co., 5825 N. Dixie Dr., Dayton, O., engrs.

▲ McAllister & Morgan Constr. Co., State Rd., Warren, O., Owner Builds, $1,600,000, 100 HOMES, Austin Village; Meriwether-Northwest Blvd. Section, WARREN, O.

▲ W. A. Sheets & Sons, 1057 Osage St., Fort Wayne, Ind., CA Est. $1,575,000, 2 story CLASSROOM SECT., 1 story INDUSTRIAL ARTS, DPT., FARM SHOP, VOCATIONAL AGRICULTURE ROOMS, GYMNASIUM, etc., at Manchester High School, 40-acre site, west of Market St. and north of Ninth St., NORTH MANCHESTER, IND., North Manchester-Chester Twp. Schools Bldg. Corp., North Manchester, Ind. Everett I. Brown Co., Illinois Bldg., Indianapolis, Ind., archt. CD 9/15.

▲ J. W. Bateson Co., 10130 Monroe Dr., Dallas, Tex., CA $6,836,100, 425 unit CAPEHART FAMILY HOUSING, Naval Training Center, GREAT LAKES, ILL., Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, Great Lakes, Ill. Yost & Taylor, 500 Greenbay Rd., Kenilworth, Ill., archts. CD 2/9, under LB.

▲† J. W. Bateson Constr. Co., 6800 Monroe Dr., Dallas, Tex., LB $9,197,000, 618 unit Capehart HOUSING, Wurtsmith Air Force Base, OSCODA, MICH. Base Procurement Office, Wurtsmith Air Force Base, Oscoda, Mich. McGaughan & Johnson, 2000 P St. N.W., Wash., D. C., archts. General Engineering Assocs., Folger Bldg., Washington, D. C., engrs. Bids Feb. 5. CD 1/22.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

March 4 Arkansas March 12 Kansas

▲† South Dakota—BA On Or About 4/1—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., erection 3 span, welded plate girder 337 ft. (long construction bridge over Missouri River, Big Bend Reservoir, Proj. near Fort Thompson, ENG-25-066-59-73. CD 9/23.

BUILDINGS—BA

▲ Mo., St. Louis County (Zone 38)—SCHOOL—BA 3/5—St. Louis Archdiocese, Bldg. Comm., 4196 Lindell Blvd., St. Louis, Zone 8, 2 and 3 story, brick, masonry, block steel, concrete, high school, Redman Ave., 1½ mi. east of Bellefontaine Rd., $1,500,000, Bernard F. McMahon, 111 S. Meramec Ave., Clayton, Zone 5, archt. Paul Londa & Assoc., 6124 Enright Ave., St. Louis, Zone 12, mechanical engrs. Van & Viersen, 7908 Bonhomme Ave., Clayton, Zone 5, electrical engrs.

HEAVY CONSTRUCTION—LB & CA

▲ TEXAS—State Hy. Comm., Austin. Bids opened 2/13. Tex.—Cage Bros., 6959 San Pedro, San Antonio, Tex., LB $996,316, 4in. course, flex. base, 2 course surf. treat. 9.563 mi. Hy. U. S. 281. (Proj. F 244(4), Blanco Co., LB $2,406,672, grade, storm sewers, cement stab. base, c. conc. etc. 0.946 mi. Hy. U. S. 59. Proj. U 514 (29), Harris Co., CD 1/22;

Tex.—Border Constr. Co. & Ross C. Watkins, Inc., P. O. Box 647, Laredo, Tex., LB $770,407, flex. base, b. conc. 2.254 mi. Hy. I. H. 35, Proj. I 35-1 (3) 19, Webb Co.;

Tex.—Williams Bros. Constr. & Schwope Eng. Co., Box 15066, Houston, Tex., LB $812,213, elevated expressway near Capital Ave. 0.163 mi. Hy. I. H. 45, Proj. I 45-1 (23) 49, Harris Co., all foregoing CD 1/22;

Tex.—Strain Bros., Inc., Box 1631, San Angelo, Tex., LB $438,599, seal coat 346.046 mi. Hy. St. 86, etc., Proj. C 303-3-20, Briscoe Co., etc.;

Tex.—Condon-Cunningham, 2603 Inwood Rd., Dallas, Tex., LB $1,814,430, grade, drainage facilities, c. conc. and bridges 0.516 mi. Hy. IH 35 W, Proj. I 35 W 5 (12) 426, Tarrant Co.;

Tex.—Foley & Williams, 243 Owen Bldg., Tyler, Tex., LB $543,917, flex. base and 1 course surf. treat. 10.059 mi. Hy. U. S. 79, Proj. F 456 (7), Rusk Co.;

Tex.—Uvalde Constr. Co., P. O. Box 10256, Dallas, Tex., LB $564,708, resurf. and shoulders, 12.292 mi. Hy. St. 183, Proj. F 634 (23) & U 634 (22), Tarrant Co., all foregoing CD 1/28;

Tex.—Luce Constr. Co., P. O. Box 1799, Vernon, Tex., LB $495,198, hot mix b. conc. wid'n. and resurf., flex. base shoulders 11.036 mi. Hy. St. 352, Proj. S 527 (1), Young Co. CD 1/29.

▲ TEXAS—State Hy. Comm., Austin. Bids opened 2/14. Elmer C. Gardner, Inc., 10050 Old Katy Rd., Houston, Tex., LB $4,163,717 (12 bidders), 2.252 mi. causeway, Laxaca Bay, Hy. St. 35, Proj. F 1059 (7), Calhoun Co. CD 1/28.

▲ TEXAS—State Hy. Comm., Austin. Bids opened 2/14. Tex.—Hugh McMillan, Inc., Box 1612, El Paso, Tex., LB $132,131, seal coat 126.908 mi. Hys. U. S. 90, etc., Proj. C 21-5-9, etc., Brewster Co., etc.; LB $1,412,410, grade, structures, 7.693 mi. Hy. IH 10, Proj. I 10-1 (10) 024, El Paso Co. CD 1/29;

Tex.—Spencer Constr. Co., Inc., 1017 S. Broadway, Carrollton, Tex., and Concho Constr. Co., 5622 Dyer St., Dallas, Tex., LB $742,585, grade, structures, 2.36 mi. Hy. Loop 820, Proj. I 820-4 (17) 444, Tarrant Co.; LB $1,671,501, grade, structures, 3.772 mi. Hy. U. S. 90, Proj. F 352 (4), Liberty Co. CD 1/28;

Tex.—Scrivner & Richardson, Inc., Aransas Pass, Tex., LB $962,014, base, c. conc. and bridge 2.35 mi. Hy. St. 35, Proj. F 534 (3), Matagorda Co.;

Tex.—Gulf Bitulithic Co., 723 N. Drennan St., Houston, Tex., LB $789,540, embankment, cement stab. base, etc., Hy. I.H. 610, Proj. I 610 (22) 781, Harris Co.;

Tex.—W. O. Pelphrey, 200 Burnet St., Fort Worth, Tex., LB $594,133, foundation course, flex. base and hot mix b. conc. 7.41 mi. Hy. U. S. 77 & 79, Proj. F 191 (11) F & 94 (8), Milam Co.;

Tex.—Spaw-Glass, Inc., 2411 Times St., Houston, Tex., LB $861,291, shell base and c. conc. 2.595 mi. Hy. U. S. 90-A, Proj. U 512 (29) Harris Co.;

Tex.—J. M. Dellinger, Inc., Corn Products Rd., Corpus Christi, Tex., LB $712,019, widen road and structures, flex. base and 2 course surf. treat. 28.138 mi. Hy. St. 173, Proj. S 71 (3) & S 399 (3), McMullen Co.;

Tex.—Ivan Dement, Inc., Capitol Hotel, Amarillo, Tex., LB $1,089,018, flex. base and 2 course surf. treat. 14.786 mi. U. S. 60, Proj. F 174 (6), Randall Co.;

Tex.—Austin Bridge Co., 1000 Singleton Blvd., Dallas, Tex., and Worth Constr. Co., 300 Greenleaf St., Fort Worth, Tex., LB $1,356,396, c. conc. and b. conc. 1.14 mi. Hy. U. S. 81, Proj. U 614 (20) & UG 614 (18), McLennan Co.;

Tex.—Worth Constr. Co., 300 Greenleaf St., Fort Worth, Tex., LB $1,060,212, c. conc. foundation course and b. conc. 11.746 mi. Hy. St. 36, Proj. C 188-1&2-B&R, Fort Bend Co.;

Tex.—T. L. James & Co., Inc., Box 531, Ruston, La., LB $407,808, widen pavement, flex. base shoulders, b. conc. 2.142 mi. Hy. St. 22, Proj. F 516 (10), Navarro Co., all foregoing CD 1/29.

▲† Winger Constr. Co., 211 E. 4 St., Ottumwa, Iowa, LB $2,733,000 (15 bidders), furnishing 18 propellant loading system skid assemblies consisting of 6 skids each, 9 skid assemblies, Francis E. Warren Air Force Base, Cheyenne, Wyo., 9 skid assemblies, Offutt Air Force Base, Omaha, Neb., Schedules 1, 2, 3, 4, 5 and 6, LB $1,366,500 (15 bidders), 9 skid assemblies Schedules 1, 2 and 3, Offutt Air Force Base, Omaha, Neb., ENG-25-066-59-67, WYOMING-NEBRASKA, U.S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 5. CD 1/7, under Wyo., Cheyenne.

Independence Constrs. & Engineers, P. O. Box 2399, Dallas 21, Tex., LB $1,463,855 (15 bidders), 9 skid assemblies, Schedules 4, 5 and 6, Francis E. Warren Air Force Base, Cheyenne, Wyo. (Wyoming-Nebraska).

▲† H. B. Zachry Co., Constr. Div., P. O. Box 10188, San Antonio 21, Tex., CA $3,809,169, runway and taxiway strengthening, Walker Air Force Base, Inv. No. 24-005-59-97, ROSWELL, N. M., U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 12. CD 2/17, under LB.

FAR WEST

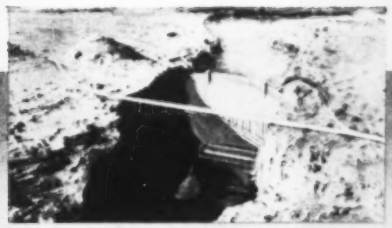
HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

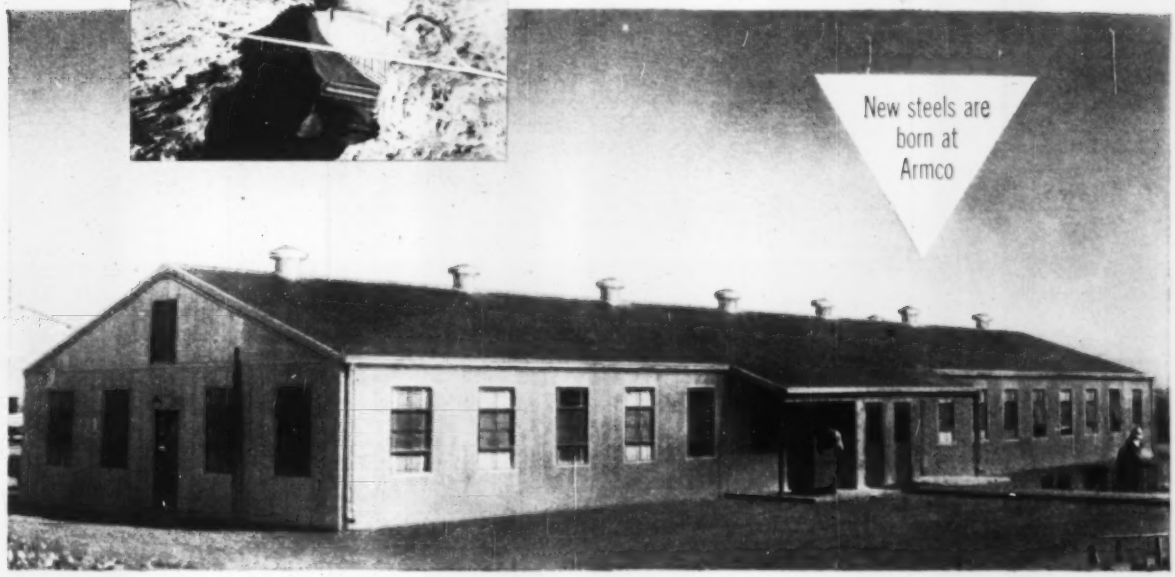
STREETS AND ROADS

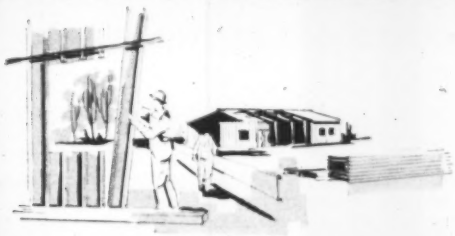
March 5 Nevada March 25 California

(Continued on page 75)



Artist's conception of completed Glen Canyon Dam and bridge.





It's hot, dusty and windy around this main office and administration building of Merritt-Chapman & Scott at the Glen Canyon Dam. But this Armco Building has all the modern conveniences and interior finish to make it comfortable and attractive.

HOW GLEN CANYON CONTRACTOR USES ARMCO STEEL BUILDINGS

Merritt-Chapman & Scott Corporation, New York, prime contractor for the Bureau of Reclamation's $108,000,000 Glen Canyon Dam in northern Arizona, has many Armco Steel Buildings at this construction site.

One interesting application is that of an L-shaped administration building, providing 9,000 square feet of office space. Because of frequent hot weather and dust-laden winds, the entire structure is air-conditioned.

Other Armco Buildings at this location include a power house structure, metals warehouse, tire storage and repair shop, and two twin-barracks for construction personnel—an additional 43,000 square feet of floor space.

At another big construction site—the Niagara Power Project in New York—Merritt-Chapman & Scott also has a number of Armco Buildings—some similar to those at Glen Canyon. These buildings, at both sites, were erected by Armco's Construction Department.

It will pay you to consider these buildings for *your* construction projects. Send coupon for free book on Armco Buildings. Armco Drainage & Metal Products, Inc., 5119 Curtis Street, Middletown, Ohio. In Canada: Guelph, Ontario.

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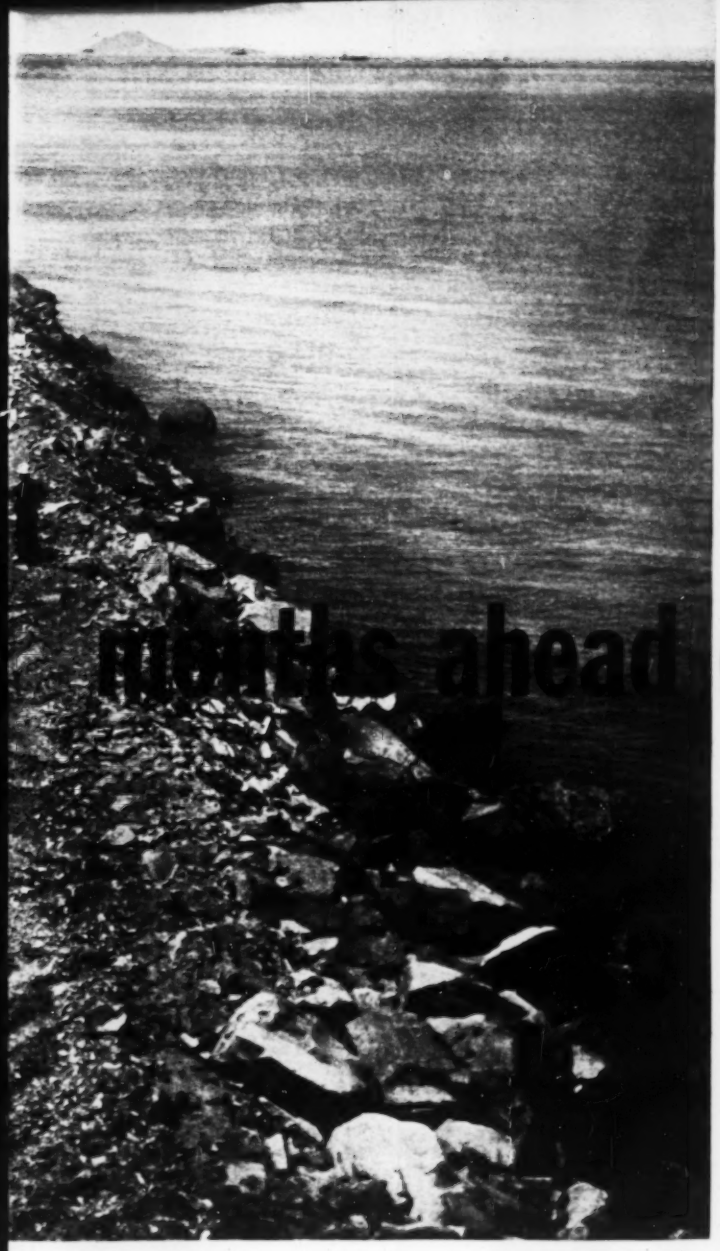
Travel a total of 20,000 miles a day!

Construction of the 12.6 mile causeway across Great Salt Lake in Utah for the Southern Pacific Railroad is one of the most unusual projects in earthmoving history. An estimated total of 36 million yds. of rock, sand and gravel is being placed in a foundation trench dug into the lake bottom to provide stability for the fill. Morrison-Knudsen Co., Inc. is using barges, trucks and rail cars on a 'round the clock, seven days a week schedule and has placed as much as 2,400,000 yds. on the fill in a single month.

There are 46 Rear-Dump "Eucs" of 22-ton rated payload capacity and 18 big Bottom-Dumps. This fleet rolls up a combined total of 20,000 miles a day—some round trip hauls are 23 miles in length.

As of the end of August, 1958, the "Eucs" had recorded a total of 295,618 operating hours. The 25 yd. Bottom-Dumps hauled over 38 million tons of gravel — nearly 10½ million yds. of rock and gravel were moved by the Rear-Dumps. It takes dependable, rugged equipment to maintain high production day after day — that's why leading contractors like M-K count on Euclid equipment for low costs and the best return on their investment.



Loaded by 8 yd. shovels, the Bottom-Dump fleet hauls 30 yd. loads to drive-over hoppers at the start of a two mile conveyor system that loads the big barges.

months ahead of schedule

Finished causeway will project 17 feet above the lake surface—"Eucs" top out the fill after barges have raised it above water.

See your Euclid dealer for information and performance data on the complete line of "Euc" Scrapers, Rear-Dump and Bottom-Dump Haulers and the world's most powerful crawler tractor—there's a size and type to match your needs.

GM GENERAL MOTORS EUCLID

EUCLID

Division of General Motors
Cleveland 17, Ohio

More Capacity
Higher Head
Longer Life

THE NEW HOMELITE 300

NEW SEAL LASTS FIVE TIMES LONGER

New pump shaft seal design mates carbon seat against ceramic-coated bronze ring for extra long service life on toughest pumping jobs. This new seal, standard equipment on the new Homelite "300" pumps, lasts five times longer than ordinary cast iron-bronze seals to slash pump downtime and maintenance costs to a new, negligible low.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

Add up all the features of the new Homelite "300" pumps and you'll find your best and surest pump answer to saving money on the job.

More Capacity. These new 3" pumps handle 18,000 gallons per hour. That's 300 gallons per minute. You can do your pumping in minutes . . . eliminate labor-costing delays. You can pump muddy or sandy water easily without clogging.

Light Weight. With dimensions of 25"x 19" x 23", the Homelite "300" pumps weigh only 103 pounds. They're easy to truck, easily picked up and carried by one man, fast to get on the job in any location.

Higher Head. Homelite "300" pumps are guaranteed to self prime at 28 feet above water level. Total head, including friction, is 65 feet. Standard-speed model gives you a total head of 125 feet. High-pressure model gives you total head of 185 feet.

Variable Speed. Hand throttle control allows you to pace these pumps to the job. You can throttle them down for quiet, economical handling of seepage.

Longer Life. Homelite pumps are famous for fast starting and trouble-free operation in any kind of weather. The design and workmanship that goes into a Homelite air-cooled gasoline engine driven pump is your guarantee of long life for the pump. Now with the new seal, standard equipment with the "300" pumps, you're even surer of long life and low maintenance cost.

It will pay you to ask for a free on-your-job demonstration of the new Homelite "300" pumps right away. Three models available: slow-speed; standard-speed and high pressure.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC.
1102 Riverdale Ave., Port Chester, New York
In Canada — Terry Machinery Co., Ltd.

(Continued from page 70)

▲† **California**—BA 3/20—U. S. Eng., 1209 8th St., Sacramento, excavating 9.1 mi. section Sacramento Deep Water Channel, incl. dredging 21,630,000 cu. yd. material, Yolo Co., Spec. 2534, ENG-04-167-59-52. $6,000,000-$8,000,000. CD 9/23.

BUILDINGS—BA

▲† **Wash., Whidbey Island**—HOUSING—BA 3/31—P. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, 550 unit Capehart housing, Whidbey Island Navy Air Station, Oak Harbor. $8,525,000. Basetti & Morse, and R. W. Beck & Assocs., 1621 Boren Ave., Seattle, Wash., archts. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲† **Gordon H. Ball Co.**, Box 278, Danville, Calif., LB $1,790,100 (8 bidders) 4,000 ft. runway exten., 200 ft. wide, incl. 4,000 ft. cement concrete taxiway, etc., 75 ft. wide, turn-up apron, etc., Fallon Naval Aux. Air Station, NBy 18217, FALLON, NEV. Dist. P. Wks. Office, 12th Naval Dist., Room C 112, San Bruno, Calif. Bids Feb. 11. CD 1/14.

▲ **WASHINGTON** — State Hy. Comn., Olympia, Bids opened 2/17.

Macrae Brothers, 5900 2 Ave. S., Seattle, Wash., LB $1,838,402, North approach to Lake Washington Canal Bridge, Seattle, FAP No. I-5-3(48)169, King Co. CD 1/27.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles; Bids opened 2/13.

Calif.—Ukropina, Polich-Kral, 770 Chaucer Rd., San Marino, Calif., LB $8,324,381 (7 bidders), grading, paving 4.1 mi. Golden State Freeway (U. S. 6-99) 8 lane, 14 structures and exten. flood control facilities between 0.4 mi. east of Burbank Blvd. and 0.2 mi. west of Roscoe Blvd., VII-L.A.-4,BRB-L.A., Los Angeles Co. CD 1/2.

Calif.—Hazard & Maxwell, 7501 Friars Rd., San Diego, Calif., LB $4,559,602 (6 bidders), grading, paving to constr. 3.6 mi. 8 lane freeway U.S. Hy. 80 between 0.2 mi. east of U.S. Hy. 395 Cabrillo Freeway and Fairmount Ave. in San Diego, incl. interchange facilities and bridge connections, XI-S.D.-12,SD-A, San Diego Co. CD 1/7.

BUILDINGS—LB & CA

▲ **G. E. Teufel Co.**, White-Henry-Stuart Bldg., Seattle 1, Wash., CA Est. $1,600,000, 10 story, rein.-con. APARTMENT, SEATTLE, WASH. 1221 Minor Ave. Apartments, Inc., c/o D. N. McDonald & Assocs., archts., 719 2nd Ave., Seattle 4, Wash. CD 7/31.

▲ **Excelsior High School Dist.**, 17923 S. Pioneer Blvd., Artesia, Calif, cancelled bids to have opened Feb. 6, La Mirada HIGH SCHOOL, LA MIRADA, CALIF. Est. $2,000,000. CD 1/14.

▲ **L. E. Dixon Constr. Co.**, 409 S. California St., San Gabriel, Calif. and **M. H. Golden Constr. Co.**, 3485 Noel St., San Diego, Calif., CA Est. $14,000,000, 70 acre (650,000 sq. ft. store space) SHOPPING CENTER for 65 stores, SAN DIEGO, CALIF. Michael C. Dirikrant, 619 Sarbonne Rd., West Los Angeles, Calif.

▲ **Steed Bros.**, 714 Date Ave., Alhambra, Calif., CA $1,662,800, PHYSICAL SCIENCE and ENGINEERING CENTER BLDG., WALNUT, CALIF. Mount San Antonio College Dist., 1100 San Jose Hills Rd., Walnut, Calif. Austin, Field & Fry, 1125 W. 6th St., Los Angeles, Calif., archts. Bids Jan. 30, awarded Feb. 10. CD 2/3, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 10 Saskatchewan

STREETS AND ROADS

March 5 British Columbia

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria.

A. I. M. Steel Ltd., Annacis Industrial Estates, B. C., CA $2,262,283, fabricating and erect steel superstructure for Alexandra bridge at Mile 192.74 on Trans-Canada Hy. in Yale Electoral Dist. Bids May 21, 1958, awarded Feb. 11. CD 6/13, under LB.

▲ **Miron & Freres Ltee.**, 3701 Jarry St. E., Montreal, Que., CA Est. $2,880,000, 14,000 lin. ft. 5 to 10 ft. 3 in. collector sewer in Boulevard St. Michel, Lauzanne and Belville Sts., ST. MICHEL, QUE. Cite de St. Michel, City Hall, St. Michel, Montreal, Que. Leroux & Rondeau, 2808 Masson St., Montreal, Que., engrs.

PUERTO RICO

BUILDINGS—LB & CA

▲† **Procurement Officer**, Ramey Air Force Base, Puerto Rico, rejected bids Nov. 1, repairs, imprvs. 995 Wherry Housing units, Ramey Air Force Base, AGUADILLA, PUERTO RICO. Will re-advertise. CD 10/3.

AMERICANS ABROAD

BUILDINGS—LB & CA

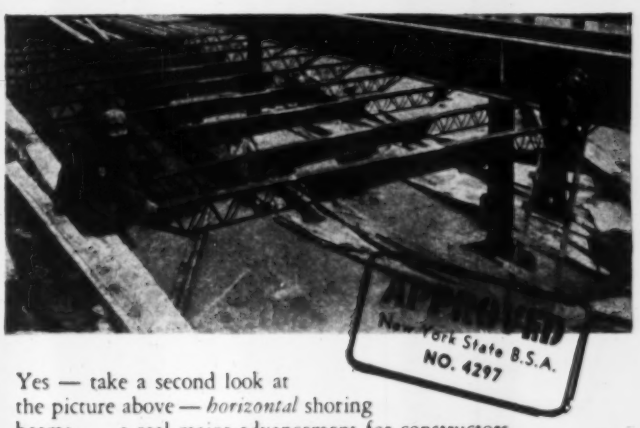
▲ **Combustion Engineering Co.**, 200 Madison Ave., New York, N. Y., U. S. A., CA $9,300,000, total est. $40,000,000, boiler for 320,000 kw STEAM PLANT, LASPEZIA, ITALY. Edisonvolta, S.p.A., Milan, Italy. Gibbs & Hill Engineering Co., Pennsylvania Station, New York, N. Y., U. S. A., engr.

(Proposal Advertisements see pp. 90 to 92)

LOOK AGAIN...

THEY'RE HORIZONTAL!

American Pecco Corp.'s New Horizontal Shoring Beams — Geared to Save You Time and Money



Yes — take a second look at the picture above — *horizontal* shoring beams . . . a real major advancement for constructors who have been plagued by today's skyrocketing costs of labor and materials. The Pecco-Beam is used for supporting concrete slab forms for concrete slab construction; carries uniform distributed weights up to 6,600 lbs. Designed on the telescopic principle, it is easily pulled into position and secured by the simple "wedge lock." The only tool needed to complete the job is an ordinary hammer. The Pecco-Beam weighs only 8 lbs. per foot — making it a cinch to move from job to job quickly. Overall efficiency and economy are built-in elements that show up dramatically in the profit picture . . . Available for sales or rental. For further information, write or call us today.

AD 36-1

AMERICAN PECCO CORPORATION

PECCO

HORIZONTAL SHORING

Federal Savings Building
188 East Post Road
WHITE PLAINS
NEW YORK

2000 TONS OF SHOT ROCK PER SHIFT

. . . that's the loading pace set by this 1½-yard American 700 Series Shovel at the Riverview Stone and Material Company quarry in Florissant, Mo. Nothing proves shovel durability like rock work . . . and American owners report hundreds of hours of trouble-free, high volume production *in rock!* Rugged design, quality manufacture and smooth power with precise control put bigger profits in jobs done with American. Your nearby Distributor has facts on this *complete* line of crawler and truck cranes and excavators.

16½ TON PRECAST SECTIONS are handled on $10 million Atlanta Farmer's Market project. Thompson and Street, Atlanta contractor uses a 30-ton American 300 Series Truck Crane to lift sections from forms—set in position. It's tricky crane work that demands smooth, positive boom and load control!

STICKY GUMBO and water seepage were problems faced by Sussex Excavating Co. on this basement job. But, with their ½-yard American 100 Series Backhoe, the Sussex, Wis. firm dug 385 yards in 7 hours—proof of American performance in any situation.

EXCAVATORS-CRANES to 2 yds.-55 tons
LOCOMOTIVE CRANES to 130 tons
DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST PACIFIC COMPANY
Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, Feb. 5; Next, Mar. 5.
- Iron and Steel Products, pipe: Last, Feb. 12; Next, Mar. 12.
- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 19; Next, Mar. 19.
- Wage Rates, Building Board, Lath, Insulation: Last, Jan. 29; Next, Apr. 2.

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION—SCORED Per M. lots of 2,000 pieces or over,			STRUCTURAL CLAY TILE—LOAD BEARING—SCORED Per M. lots of 2,000 pieces or over,			BRICK Per M. in quantity		LIME Per ton, in paper, Carload lot,		
	3x12x12 In.	4x12x12 In.	8x12x12 In.	8x12x12 In.	10x12x12 In.	12x12x12 In.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$166.75p	$149.90pkk	$299.80p	$337.25p			$30.56p	$32.70p	$33.00kk	$25.00kk	$25.00kk
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.60	23.20	
Birmingham	135.00p	152.00p		303.00p	376.00p	465.00p	27.00ff	38.00ij	35.02	22.30	26.33g
Boston	232.00rt	248.00tt	463.25tt	556.00tt			41.50p	56.50p	40.00e	32.00e	
Chicago	135.00ll	145.00ll	280.00ll				30.00	32.00	38.00ll	35.20oll	
Cincinnati	205.00jt	225.00jt	296.00jddt	213.00jt	288.00jt	314.00jt	48.75jk	47.00jk	28.00jt	24.50jt	28.00jt
Cleveland	200.00	213.00		438.00			40.00	43.00qq	32.75p	28.00p	
Dallas	152.00	152.00	300.00	364.50	446.25	552.50	27.50rf	49.00	41.80	24.58	28.50
Denver							21.50	49.50	48.00p	42.00p	46.00p
Detroit	242.00t	258.00t	483.00t	548.00t	723.00t	827.00t	47.50pt	48.00pt	38.00t	30.00t	40.00t
Kansas City	158.00mm	158.00mm	312.00mm	312.00mm	400.00mm	500.00mm	34.00mm	34.00mm	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	35.00ll		38.00nn	38.00nn	39.00nn
Minneapolis	192.00pr	215.00pr	437.00pr	215.00pree			45.60rpr	54.00ypr	49.00bbr	38.00bbr	52.00bbds
Montreal	170.00nnqoo	178.00nnqoo	325.00nnqoo	270.00qoo	400.00qoo		48.25bll	56.30bll	39.00	22.00	13.25
New Orleans	186.00	186.00	380.00	380.00			42.00	55.00	44.00	32.00	32.00
New York	176.90h	188.70h	283.00eh	285.50hn			44.00p		40.00p	37.00p	
Philadelphia	169.00	180.20	337.90	405.00			30/34	38/42	27.60	25.60	3.17m
Pittsburgh	147.50t	157.50t	295.00t	335.00t	435.00t	500.00t	39.00t	46.00t	36.00t	31.00t	34.00t
St. Louis	180.00mmpp	190.00pp	385.00pp	401.00ppp	459.00pp	621.50pp	44.00mmpp	45.50pp	1.00aapp	80aapp	1.35aaapp
San Francisco	156.85*	177.10*	235.30dd*	159.40qq			43.00*	43.00*	29.24	29.24	31.74
Seattle	235.00pt	270.00pt	490.00pt	265.00pse-t			48.00t	62.00t	52.00bbt	38.00bbt	4.50mbbt
Toronto	158.00rr	173.00rr	336.00rr	263.00frr	378.00rr		35.00rr	63.00rr	37.00ss	34.50ss	32.50ss

*$ F.o.b. yard. **F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 in.-6 cell. *d Pulverized hot. *e less 5% disc., 10th. *f 8 x 8 x 12. *g Lumps, $26.72. *h F.o.b. trucks, job site N.Y.C. *i 80 lb sacks. *j Truck load or over. *k $1.00 discount. *l Red face. *m Per bbl., 180 lb. processed. *n 7⅝ x 7¼ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra. *r Not used: earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *y Chl common. *z Pebble: 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 25¢ disc., cash. *ii F.o.b. plant. *jj rough; smooth; $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2%, 10 days. *nn F.o.b., L. A. *oo less 2%, 3 days. *pp add 2% sales tax. *qq 8 x 5½ x 11½. *rr 2% disc., 10 days. *ss 5% disc. 30 days, *R revised. eff. 3 1 59.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD/R Per 100 lb. In 600-lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. In 100 lb. cases in oil	READY-MIXED PAINT Per gal., drums			ROOFING SUPPLIES; Carload lots f.o.b. factory				
			Graphite b	Aluminum c	Ferric Oxide d	Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$13.75ggg	$21.00ggg	$3.59	$3.86	$3.31	$2.35H	$2.15H	$2.62	$0.67	$57.75
Baltimore	17.50l	24.00	3.00	4.40	3.50	2.78	4.25	4.25	.48	54.75R
Birmingham	13.75gg	24.65gg	3.90	3.40	....	3.09ff	2.29iif	2.29iif	.80ff	45.00ee
Boston	24.95ff	6.00ffm	....	....	....	3.81g	2.56g	2.83g	.56g	58.00g
Chicago	15.25gg	6.90ll	....	....	....	4.05akk	3.02akk	3.32akk	46.00bbkk	57.70ffkk
Cincinnati	15.25gg	4.00gg	....	....	....	2.59H	2.02aH	2.42aH	428yH	55.96H
Cleveland	26.10	6.90	2.4805pgg	3.296gg	2.901gg	3.51q	2.44o	2.85o	58q	49.00gg
Dallas	22.50L	23.50M		3.25B		3.00u	3.00o	3.00o	.470	66.00AA
Denver	23.00n	24.00	3.98	5.20	3.70	2.92	2.20o	2.80o	48ff	50.00
Detroit	14.75	24.00	2.70H	3.95H	2.70H	3.11H	2.23aHll	2.42aHll	.51ffH	49.00H
Kansas City	25.65gg	29.60	3.99	3.43	3.01	3.58tmm	2.61mm	2.61mm	71y	
Los Angeles	23.86l	26.90	3.30n	4.50n	4.20n	3.20nkk	2.15nakk	l	70nykk	l
Minneapolis	16.33	29.88K K				3.09kk	2.52akk	2.42akk	442akk	50.00kk
Montreal	19.45l	6.00rr	5.52Dffmn	6.54zffl	5.10kffmn	5.40	4.65f	4.65f	1.60	4.40l
New Orleans	23.00	24.00	....	....	....	2.78	1.98	2.85	0.680	
New York	25.65oo	26.90	....	....	....	3.10	1.87o	2.45o	438z	49.00*
Philadelphia	28.26gg	5.90	3.60	3.40/3.65	3.50/4.00	3.00/3.30	2.54o	2.54o	37/45	48/54
Pittsburgh	15.00mgg	29.75	2.20xEJ	2.25xFJ	2.25xGJ	3.37xH	2.59xH	2.78H	45H	52.00H
St. Louis	25.65tm	26.90	....	....	....	3.27tmmm	2.39AAK	2.85AAK	428yK	62.00K
San Francisco	26.70MM	26.90	3.20	4.30	3.50	2.95	1.97aaas	3.10	46ff	54.00
Seattle	10.95l	24.50	3.47	4.19rffJ	3.56J	4.02qrcJ	3.50krcJ		55rr	51.40rr
Toronto	15.45	20.15	5.15J	6.18J	5.95J	5.15	4.00aae	2.90o	1.25f	55.00A

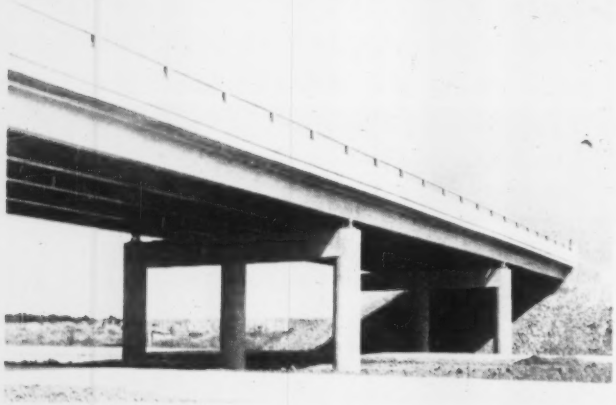
*! Delivered. * Note: Red lead in oil 50% higher than white lead in oil. **Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e Per 108 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb. keg. *n F.o.b. city. *o Per 60 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *w Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *dd Asphalt pitch in 100 lb package. *ff 5-gal drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *nn eff. Mar. 1st. *oo 100 lb bbls. *ll 400 lb barrels. *pp ASTM Spec. D962-49. *qq 95%. *rr Std. black. * Milt. spec.: E TTP27; F TTY81; G TTP31. *tt less 2% disc., cash. *! Per 100 lb. *! less 1% disc., 10 days. *k add 2% sales tax. *l CL. *M 1 ton

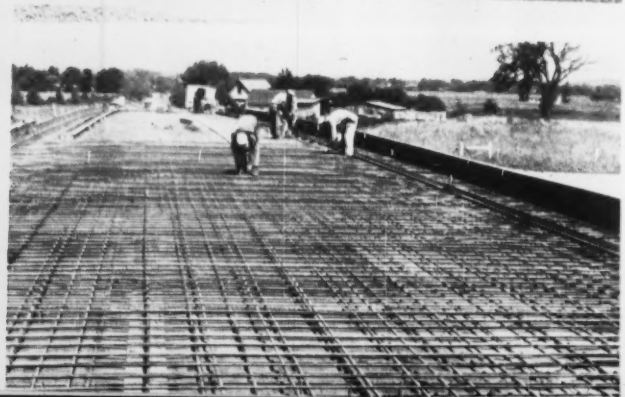
PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡		VERMICULITE‡			PERLITE‡		ALUMINUM SHEET‡	STAINLESS STEEL† SHEET-TYPE 302g		COPPER WATER* TUBING-TYPE L 2000 ft lots, per ft	
	Neat per ton	Gauging per ton	Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated per bag of 4 cu ft	Plaster Aggregate	Concrete Aggregate Untreated	Flat .102" th 36"x96" & 48"x144" per lb‡	Corr roof .032" th 35"x12' per sht	20 ga 48"x96-120" per cwt‡	28 ga 36"x120" per cwt‡	½"b	⅝"c
Atlanta	$31.50mn	$37.50mn	$1.55nnn	$1.65mn	$1.80dnn	$1.65	$1.65	$0.440n	$8.83nR	$65.68zzz	$74.43zzz	$16.74fzz	$23.41fzz
Baltimore	23.80	34.60	0.95	1.15	1.15	1.15	1.65	0.487	0.487r	64.70	73.45	0.1674	0.2371
Birmingham	33.00	39.00	1.55	1.55	1.80l	1.55	1.55l	0.458d	10.48	65.34	76.09	0.1702as	0.2380as
Boston	22.00	30.00	1.40	1.40	1.45	1.45	1.50	0.462	29.35p	65.42dd*zz	71.92dd	0.1702as	0.2380as
Chicago	26.80tt	26.80tt	1.55	1.60	1.60l	1.60	1.60	0.506z	10.294a	65.15ee	73.90ee	0.1702	0.2380
Cincinnati	23.85*ss	23.85*	1.75*ss	1.75*ss	1.75*ss	1.85	1.90	0.434	9.59r	65.30zz	74.05fzz	0.1680as	0.2345as
Cleveland	28.00	45.00	1.13k	1.16tt	1.24l	1.45	1.45	0.458aa	8.48	65.33mzz	74.08mzz	17.02fft	23.80tt
Dallas	30.65	32.65	1.07	1.23	1.32	1.21	1.32	0.484	0.517r	65.00	78.00	0.1520	0.2170
Denver	27.00	27.00	1.50	1.40	1.50	1.40	1.55	0.462	10.28	65.32gg	76.09gg	0.1772	24.69
Detroit	28.00D	28.00D	1.27D	1.31D	1.40D	1.43k	1.50k	0.452a	10.19a	65.15azz	73.90azz	0.2380f	0.27f
Kansas City	30.00	35.00	1.14E	1.18E	1.26E	1.18		0.444	23.20qqqq	67.50E	76.25E	17.02f	23.80f
Los Angeles	27.00tt	28.00tt	1.25ktt	1.20ktt	1.25tt	1.06	1.10	0.486	10.543	67.02	75.77	0.1702	0.2380
Minneapolis	35.00F	35.00F	1.55Mt	1.70F	1.80F	1.40	1.40	0.468	16.23	65.71G	72.21ffG	0.1702f	0.2380
Montreal	27.60k	35.60k	1.25	1.40	1.50	1.15r	1.15r	43.95AH	12.10H	64.75H		0.1827	0.2160
New Orleans	34.00	48.00	1.25	1.25	1.25	1.25	1.25	0.50	8.715	71.50	72.45	0.1702	0.2380
New York	25.25	31.25	1.35	1.30	1.50	1.40	1.40	0.493ad	10.929a	68.58aB	77.33aB	17.26f	24.13f
Philadelphia	23.25	32.00	1.35	1.35	1.40l	1.05	1.05qq	0.44a	9.46a	66.68a	75.77a	15.62	21.76f
Pittsburgh	30.00nn	33.00nn	1.60nn	1.50nn	1.35	1.73	1.73	0.452	9.46	64.00	76.25pp	0.1702	0.1680
St. Louis	30.00uu	41.00uu	1.50uu	1.60uu	1.55uu	1.60uu	1.60uu	0.452	10.28	65.39Kmm	71.89yuu	17.02fmm	21.42fmm
San Francisco	29.50	30.50	1.38	1.38	1.50	1.30	1.58o	0.512	9.05	67.10	73.60	0.1702	0.2380
Seattle	42.40	45.60D	1.55D	1.25kD	1.85D	1.50k		0.513	9.90K	67.02K	75.77	0.1680	0.1876
Toronto	29.00	48.50	1.25	1.35	1.40		1.55	0.3995	24.75ap	73.74	86.52	0.2777	0.30166n

‡trucklots, delivered †fob warehouse *fob city *a delivered *b 1½" O.D. *c 5⅛" O.D. *d 0.100"th *e 34" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *r per lb *s 30 lb bag *t 36" x 96; 10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x 0.11"th *y 27 gauge *aa 16M lb & up *dd add $1.00 cwt boxing *ee 4 tons & up *ff 26 ga *gg add $2 cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96": 60.4-lb, per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt: 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *ww Per 100 sf. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *B crated. *C 15M lb. *E Quantity differential. *F less 5% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *k less ½%, 10 days. *l. 5% disc. 30 days.

Ohio's 1,524-mile Interstate Program





120 tons of steel reinforcement per mile will make Ohio's Interstate highways stronger and longer lasting. USS *American* Welded Wire Fabric, made of cold-drawn steel wire, withstands high unit stresses; permits construction of concrete slabs 30% stronger and up to 100 feet long. *American* Transverse Road Joint Load Transfer Assemblies also help assure a permanently smooth-riding road surface.

800 bridges, underpasses and overpasses will stud the Interstate network in Ohio. Much of the 398,670 tons of steel used in these structures—beams and girders, plates, piling, bridge railings, etc.—will be furnished by United States Steel: USS *Tri-Ten* Steel and our other High Strength Steels, USS *Cor-Ten* and USS *Man-Ten*, as well as USS "*T-1*" Constructional Alloy Steel, are available for bridges in which weight saving is essential. USS AmBridge *I-Beam-Lok* Flooring, open or concrete filled, will keep weight and maintenance to a minimum. USS *American Super-Tens* Stress-Relieved Strand and Wire are also available.

A sturdy backbone of steel goes into the deck and piers of every Interstate bridge built in Ohio. Specifically designed to produce a better reinforced concrete at lower cost, USS *Di-Lok* Bars feature a continuous diamond-shaped interlocking deformation that assures positive anchorage in the concrete and reduces cracking to the minimum. Used with *Atlas Duraplastic*, an air-entraining Portland cement that fortifies concrete against freezing-thawing weather and scaling caused by de-icing salts, this superior reinforcement ensures the maximum of strength and permanence.

is rolling in high gear

...with 600,000 tons of STEEL to speed the job!

No less than seven Interstate Highway routes will crisscross Ohio with a strategic network of high-speed freeways. Scheduled for completion by 1972, these modern expressways, linking all parts of the state, will give Ohio one of the safest, most easily traveled highway systems in the country and at the same time will put every factory, farm and business in Ohio only short hours distant from ocean-going shipping at Ohio's Lake Erie ports.

Work on this $2.3 billion system is progressing rapidly. Motorists are already using nearly 46 miles of the multi-lane freeways, and construction of 327 more miles was well underway by January 1, 1959. Ohio has put 97% of the highway funds allocated to date by the federal government to work in its record-breaking program.

Ohio's Interstate network comprises the following routes: IR 71—326 miles—Cincinnati to Conneaut, joining Cincinnati, Columbus and Cleveland and the Pennsylvania link with the New York Thruway. More than 150 miles under construction, with the 102-mile Columbus-Medina section due to be completed this year. Cost $581 million.

IR 75—213 miles—Cincinnati to Toledo. Under construction are the 34-mile Cincinnati-Dayton Expressway—first six-lane divided highway in rural Ohio. Also other sections in Troy, Piqua, Sidney, Lima, and Findlay areas. Cost $353 million.

IR 70—230 miles—east-west Wheeling, W. Va., to Richmond, Ind., will parallel U. S. 40. More than 50 miles under construction. Cost $287 million.

IR 77—175 miles—Cleveland to Marietta. Cost $290 million.

IR 90—250 miles—Toledo to Conneaut. Will be routed over Ohio Turnpike from Toledo, Lakeland Freeway through Cleveland, and Cincinnati-Conneaut Freeway east to Willoughby Hills. Section between Conneaut and Painesville under construction.

IR 80—270 miles—Toledo to Youngstown. To be routed over turnpike from Toledo at Norwalk.

IR 271—60 miles—route locations being studied.

The program was developed under the direction of Charles M. Noble, Director of Highways, and George J. Thormyer, State Highway Engineer.

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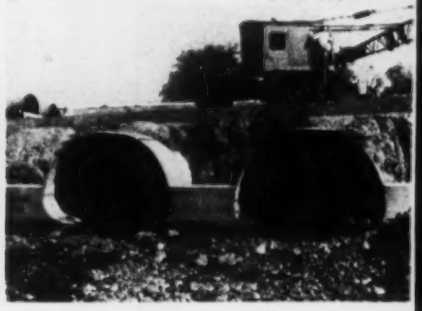
Get your free copy of this informative catalog. Here are 54 pages packed with practical products that will help you cut costs and speed up operation in every phase of highway construction. It lists all the products and the many services available through United States Steel. Just write to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

Eight and a half million feet of steel guardrails will reduce the hazards of high-speed travel on Ohio's new expressways. Every curve and trouble spot will be safer when protected with USS Beam Guard Rail. More than 2,100 tons of steel will be used in the sign and route marker posts on these freeways. Straying livestock and wild animals will be kept safely off the roads by enough steel wire fencing to stretch clear across the continent. Much of it will be USS *American* Wire Fence.

Steel expedites foundation work. For cofferdam construction, USS Steel Sheet Piling provides easy installation of strong earth- and watertight excavations. In piers and abutments, where high load capacity and dependable protection against flood water and scour are needed, USS Steel H-Piles supply them. They offer a practical solution to many foundation problems, especially when unstable ground conditions are encountered. Both these time-tested products are ready for use as shipped.



26,825 tons of corrugated steel culverts will go into Ohio's expanding highways. For large drainage structures like these on Interstate 70, USS AmBridge Sectional Plate can be provided in Pipe, Pipe-Arch and Arch sections in a wide variety of sizes and gages. For smaller drainage systems, USS Galvanized Culvert Sheets ensure strength, low cost and speedy installation. Concrete pipe reinforced with USS *American* Welded Wire Fabric can also be used to good advantage.

USS United States Steel

Division of United States Steel serving the highway market: American Bridge Division, Pittsburgh, Pa. • American Steel & Wire Division and Cyclone Fence Department, Cleveland, Ohio • Columbia-Geneva Steel Division, San Francisco, Calif. • Consolidated Western Steel Division, Los Angeles, Calif. • National Tube Division, Pittsburgh, Pa. • Tennessee Coal & Iron Division, Fairfield, Alabama • Universal Atlas Cement Division, New York • United States Steel Supply Division, Steel Service Centers, Chicago, Illinois

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, Feb. 5: Next, Mar. 5.
- Iron and Steel Products, pipe: Last, Feb. 12: Next, Mar. 12.
- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 19: Next, Mar. 19.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan. 29: Next, Apr. 2.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor: Building	Common Labor: Heavy Const	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$3.75	$3.10	$3.30 + 7½[e]	$3.225	$3.25	$3.50 + 10%[e]	$3.35 + 20¢[d,ee]	$1.75	$1.75	$1.75	$1.85	$2.10
Baltimore	3.95 + 10%[d]	3.20 + 7½[d]	3.90 + 7½[d]	3.80 3.95 + 10%[d,q]	3.60 + 7½[d]	3.425 + 7½[d]	3.30 + 7½[d]	2.05 + 7½[d]	2.05 + 7½[d]	2.00 + 7½[d]	2.00 + 7½[d]	2.10 + 7½[d,ff]
Birmingham	3.85	2.95	3.35 + 10%[k]	2.77[r]	3.17	3.425	3.40 + 10%[k]	1.75	1.85	1.85	2.02[ff]	2.35[oo]
Boston	3.80 + 20%[e]	3.40 + 10%[d]	3.60 + 20%[m]	3.77½ + 10%[d]	3.65 + 35¢	3.70 + 12%[e]	3.20 + 10%[d]	2.60 + 7½[d,R]	2.50 + 7½[d,R]	2.45[ss]	2.45[oo]	2.65[ff]
Chicago	3.82½ + 7½[e]	3.65 + 20%[m]	4.00 + 16%[e]	3.55 + 5%[e]	3.70 + 23%[e]	3.90 + 12%[e]	3.75 + 22%[mm]	2.77½ + 7½[e]	2.77½ + 7½[e]	2.46 + 15%[e,ss]		
Cincinnati	3.85	3.57½	3.65 + 10%[d,R]	3.375 3.60	3.62½	3.82 + 4%[e]	3.80 + 9½[e]	2.62½	2.525	2.45 + 24%[LL]	2.55 + 24%[LL]	2.65 + 24%[LL]
Cleveland	3.865 + 10%[e]	3.80	3.79 + 10%[e]	3.80	3.95	3.70 + 10%[e]	3.15	3.065	2.75 + 10%[e]	2.75 + 10%[e]	2.75 + 10%[e]	
Dallas	3.875	3.25	3.30 + 7½[e]	3.375	3.625 + 13%[m]	3.375 + 7½[e]	3.45 + 8½[e]	1.70	1.70	1.70 2.625[pp]	1.70 2.625[pp]	1.70 2.625[pp]
Denver	3.75	3.34	3.175 + 7½[e]	3.05	3.475 + 12½[e,ss]	3.60 + 14%[e]	3.55 + 10%[e]	2.17	2.17	2.30	2.40	2.55
Detroit	3.77 + 20%[e,R]	3.40 + 41%[e]	3.75 + 22½[e]	3.47 + 25%[e]	3.66 + 34%[e,ee]	3.80 + 35½[e]	3.73½ + 14%[R]	2.65 + 33%[e]	2.80 + 10%[e]	2.80	2.80	2.80
Kansas City	3.85	3.325	3.40	3.345	3.625	3.60 + 2%[e]	3.60 + 9½[ee]	2.355	2.405	2.33	2.33[ee]	2.405[ee]
Los Angeles	3.85 + 10%[ll]	3.375 + 20%[ee]	3.55 + 20½[e,ee]	3.41 + 10%[d]	4.00 + 30%[t]	4.15 + 4%[N]	3.90 + 10%[R]	2.68 + 10%[d]	2.68 + 10%[d]	2.93 + 10%[d,qq]	2.83 + 20%[d,qq]	3.12 + 10%[d,qq]
Minneapolis	3.725	3.30	3.47	3.30	3.40 + 23%[e]	3.38 + 37%[e]	3.42 + 20%[e]	2.55	2.70	2.55	2.55[e]	2.70[e]
New Orleans	3.525 + 5%[e]	3.00	3.30 + 7½[e]	3.125 + 7½[e]	3.12 + 5%[e]	3.475 + 7½[e]	3.40 + 15%[e]	1.75	1.75	2.475 + 7½[d]	2.475 + 7½[d]	2.475 + 7½[d]
New York	4.65 + 13%[e,w]	4.20 + 34%[e,f]	4.45 + 16%[e]	4.45 + 39%[e,ss]	4.35 + 52%[e]	3.90 + 51%[e,f]	4.40 + 45%[e,ss]	3.10 + 25%[e]	3.10 + 25%[e]	2.35 + 22½[e,ee]	3.15 + 23½[e,BB]	3.15 + 23½[e,BB]
Philadelphia	4.00 + 17%[e]	3.635	4.175 + 23%[M]	2.595 4.23 + 10%[q]	4.05 + 15%[e]	4.07½ + 16%[e]	4.10 + 16½[e]	2.65	2.35		2.57 + 15½[e,ee]	
Pittsburgh	4.20 + 20%[e,ff]	3.675 + 15%[e,ff]	4.00 + 20%[e]	3.64 + 10%[d]	3.825 + 20%[e]	4.35 + 32½[e,d]	4.00 + 20%[e]	2.45 + 20%[m]	2.30 + 20%[m] +	2.37 + 20%[m] +	2.51 + 20%[m] +	2.61 + 20%[m] +
St. Louis	4.05 + 32½[t]	3.575 + 10%[e]	3.60 + 7½[e]	3.675[t]	3.80 + 7½[e]	3.95½ + 29.5%[d]	3.92½ + 27½[e]	2.625 + 10%[e]	2.625 + 10%[e]	2.725 + 7½[e,ee]	2.725 + 7½[e,ee]	2.725 + 7½[e,ee]
San Francisco	4.10 + 42½[e,dd]	3.30 + 32½[e,m]	3.85 + 20%[m]	3.405 + 10%[e]	3.74 + 52½[e,m]	3.91 + 34½[e,f]	3.70 + 46%[R]	2.685 + 10%[e]	2.685 + 10%[e]	2.81 + 10%[e]	2.75 + 10%[e]	2.89 + 10%[e]
Seattle	3.90 + 10%[d,R]	3.32 + 10%[d]	3.40 + 10%[d]	3.29 + 20%[m]	3.57 + 30%[e]	3.65 + 26%[X]	3.81 + 21%[f]	2.85 + 10%[d]	2.85 + 10%[d]	2.87 + 17½[e,ee]	2.87 + 17½[e,ee]	3.07 + 17½[e,ee]
Montreal	2.20 + 5%[e]	2.10 + 5%[e]	2.25 + 5%[e]	2.00 + 5%[e]	2.35 + 5%[e]	2.20 + 5%[e]	2.32 + 5%[e]	1.50 + 3%[e]	1.50 + 3%[e]	1.50 + 3%[e]	1.50 + 3%[e]	1.50 + 3%[e]
Toronto	2.95 + 12%[e]	2.65 + 11%[e]	2.55 + 10%[e]	2.75 + 11%[e]	2.80 + 19%[e]	3.05 + 12%[e]	2.95 + 12%[e]	1.70 + 7%[e]	1.70 + 7%[e]	1.80 + 7%[e]	1.80 + 7%[e]	1.80 + 7%[e]

	Tractor Operators Incl. bulldozers: 34 49 hp	70 100 hp	100 & over	Tractor scraper 15 16 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.75	$2.90	$2.90	$2.75	$3.275	$3.425	$2.75	$2.675	$1.87
Baltimore	3.40 3.55 + 10%[d,e]	3.40 3.55 + 10%[d,e]	3.40 3.55 + 10%[d,e]	3.40 3.55 + 10%[d,e]	3.40 3.95 + 10%[d,e]	3.40 3.95 + 10%[d,e]	3.40 3.55 + 10%[d,e]	2.85 3.00 + 10%[d,e]	2.10 + 7½[d]
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52[VV]	1.90
Boston	3.40 + 10%[d,e]	3.40 + 10%[d,e]	3.40 + 10%[d,e]	3.40 + 10%[d,e,R]	3.775 + 10%[d]	3.775 + 10%[d]	3.40 + 10%[d]	3.325 + 10%[d]	2.60 + 7½[d,ss]
Chicago	3.30 3.45 + 5%[d]	3.30 3.45 + 5%[d]	3.30 3.45 + 5%[d]	3.30 + 5%[d]	3.90 + 5%[d]	3.90 + 5%[d]	3.50 + 5%[d]	3.40 + 5%[d]	3.55 + 5%[e]
Cincinnati	3.375	3.375	3.375	3.375	3.375	3.60	3.60	3.60	3.60
Cleveland	3.64	3.64	3.64	3.64	3.89	3.89	3.64	3.515	3.515
Dallas	1.70 2.625[pp]	1.70 2.625[pp]	1.70 2.625[pp]	1.70 2.625[pp]	3.10	3.10	1.70 2.625[pp]	1.85	1.85
Denver	2.30	2.90	2.90	2.90	3.05	3.05	2.90	2.90	2.45
Detroit	3.50 + 10%[d]	3.50 + 10%[d]	3.50 + 10%[d]	3.50 + 10%[d]	3.50 + 10%[d]	3.50 + 10%[d]	3.50 + 10%[d]	3.195 + 10%[d]	2.78 + 25%[RR]
Kansas City	2.65	3.10[e]	3.10[e]	3.10[e]	3.345	3.345	3.10	3.10[ee]	2.45
Los Angeles	3.71 + 10%[d,e]	3.71 + 10%[d]	3.71 + 10%[d]	3.81 + 10%[d]	3.81 + 10%[d]	3.81 + 10%[d]	3.81 + 10%[d]	2.93 + 10%[d]	2.89 + 10%[d]
Minneapolis	3.08	3.30[e]		3.30	3.52[e]	3.783[e]	3.08	2.97	2.70
New Orleans	3.125 + 7½[e]	3.125 + 7½[e]	3.125 + 7½[e]	3.125 + 7½[e]	3.125 + 7½[e]	3.125 + 7½[e]	3.125 + 7½[e]	2.475 + 7½[d]	1.85
New York	3.825 + 31%[e]	3.825 + 31%[e]	3.825 + 31%[e]	3.95 + 32%[e]	4.70 + 35%[e]	4.70 + 35%[e]	3.95 + 32%[e]	3.95 + 32%[e,ee]	3.55 + 15%[e,qq]
Philadelphia	2.595 4.23 + 10%[d]			2.595 4.23 + 10%[d]	2.595 4.23 + 10%[d]		2.595 4.23 + 10%[d]	2.595 4.23 + 10%[d]	2.35
Pittsburgh	3.44 + 10%[d,e] +	3.44 + 10%[d,e] +	3.44 + 10%[d,e] +	3.44 + 10%[d,e] +	3.64 + 10%[d,e] +	3.64 + 10%[d,e] +	3.64 + 10%[d,e] +	3.15 + 10%[d,e] +	2.30 + 20%[m] +
St. Louis	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.125[t]	3.125[t]
San Francisco	3.70 + 10%[e]	3.70 + 10%[e]	3.70 + 10%[e]	3.70 + 10%[e]	3.85 + 10%[e]	3.85 + 10%[e]	3.75 + 10%[e]	3.10 + 10%[e]	2.955 + 10%[e]
Seattle	3.26 + 20%[m]	3.26 + 20%[m]	3.26 + 20%[m]	3.26 + 20%[m]	3.63 + 20%[m]	3.63 + 20%[m]	3.35 + 20%[m]	2.99 + 20%[m]	3.05 + 10%[d]
Montreal	1.70 + 4%[e]	1.93 + 4%[e]	1.93 + 4%[e]	1.93 + 4%[e]	2.19 + 5%[e]	2.19 + 5%[e]	1.93 + 4%[e]	1.80 + 4%[e]	1.80 + 4%[e]
Toronto	2.15 + 9%[e]	2.25 + 9%[e]	2.25 + 9%[e]	2.25 + 9%[e]	2.75 + 11%[e]	2.75 + 11%[e]	2.25 + 9%[e]	2.30 + 9%[e]	2.30 + 9%[e]

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.791. ENR Common Average $2.504

R: revised. † not incl 12.5¢ increase retro. to 1 1 59 not yet ratified by union.

•a 6 hr day. •b 7 hr day. •c 5% vac. stamp fund plus 12¢ WF for bricklayers; 4% VF for electricians plus 10¢ WF, 1% PF. •d H & WF. •e 10¢ H & W, 10¢ VF. •f 10¢ H & W, 7½¢ VF, 2¢ Ed, 7½¢ H & W. •g WF, 1¢ AF. •h WF. •i Inc. 4% VF; 1% PF pd by employer. •k 10¢ WF, 10¢ VP, 5¢ HP. •l 4% VF. •m 10¢ WF, 10¢ PF. •n 7% V & Hol., 3% H & W, 1% PF. •o lower rates, straight time; other broken. •p 3% WF, 3% PF + 1% in lieu of pd. hol. •q 10¢ WF, 6% V & H, 3% PF. •r 4% WF, 20¢ PF. •s 5% W & PF, 4% VF, 1% NC 1% JI, plus 6 PH. •t Inc. 10¢ WF. •u 10¢ WF, 1% PF, ½% apprent. •v 1 dru., 2 drums, 2.93. •w 20¢ VF, 17½¢ PF, 3¢ Prom., 12¢ W. •x VF. •y 2-axle. •z 10¢ WF, 3% HP, 15¢ V & H. •A 15¢ WF, 15¢ PF, 20¢ BF. •B 7½¢ VP, 5¢ PF, 1½¢ Ed. F. •C 10¢ H & W & ins., 7% V & H. •D 4% VF, 10% WF, 1% PF. •E 20¢ WF, 30¢ VF. •F Plus $4 per day annuity contrib. •G 10¢ WF, 10¢ VF, 3¢ prom. •H 10¢ WF, 10¢ VP, 3% PF, 2% PH. •I 5¢ H & WF, 5¢ advtg. •J 5% WF, 6 PH, 3% PF. •K 7½¢ WF, 2½¢ AF. •L 3% WF, 3% PF, 3% VF, 1½ Ed. F. •M 15½¢ WF, 7½¢ PF. •N 1% PF. •O 10¢ WF, 1% PF, 4¢ AF, 10¢ VF. •P 10¢ H ins., 7½¢ PF, 5¢ VF. •Q 2 drums; 1 drum $3.10 3.25 + 10¢ WF. •R 10¢ H & WF, 2¢ admin, 1¢ apprent. •S 5¢ H & WF, 7¢ PF. •T H & W, VF. •U 10¢ WF, 4% VF, 1% PF, 5¢ Ind. F. •V 4% WF, 4% PF. •W 7½¢ WF, 1½¢ Ed. F. •X 7½¢ WF, 15¢ VF, 3¢ PF. •Y 10¢ H & W, 9¢ PF. •Z intermediate. •aa 7¢ WF, 15 PF. •bb roads, jackhammer; bldg: $3.325 + 10¢. •cc less than 2-T. •dd 17½¢ WF, 20¢ PF, 10¢ PH, 5¢ Jt Bd. •ee $2.25 wk WF, $2 wk PF. •ff 10¢ H & W, 5¢ PF. •gg 6-8 cy. •hh 7½¢ H & WF, 5¢ indus. prom. •ii 4% WF, 4% PF, 6 PH. •jj 2% VF. •kk 10¢ HW, 10¢ P, ½¢ AF. •ll 10¢ HW, 10¢ PF, 5¢ Trust F, 5¢ Trade Prom. •mm 10¢ W, 20¢ 2½¢ Gen. Ben. •nn 7½¢ WF, 2¢ EF. •oo 10¢ WF, 3¢ EF. •pp higher rates are union, other taken from min. wage approved by County Comm. Court. •qq flatbed. •rr under 10 cy. •ss over 10 cy. •tt 7½¢ H & W, 7½¢ P, 5¢ Ed F. •uu single. •vv 7½¢ H&W, 8¢ PF. •ww 7½¢ H&W, 10¢ PF. •xx 7½¢ H&W, 11¢ PF, 11 PH. •yy 11% to 3 T. •zz 5 tons & over; $2.22. •AAA 5¢ H&W, 2½¢ PF. •BBB Incl. 2% VF. •CCC 10¢ H&W, 10¢ PF, 5¢ VP. •DDD plus $2.25 wk WF. •EEE 5% WF, 6 PH. •FFF heavy constr: $2.93. •GGG 10 wh. 3-axle. •HHH Euclid. QQ 10¢ H&W, 10¢ P

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag [a]	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag [a]	3" batts per M sf	ALUMINUM FOIL 60¢ Kraft Expansible 1 side foil Blanket 2 per roll of 250 s. f. layers foil per Msq ft
Atlanta	$65.00	$55.00	$42.00	$65.00	$68.00	$127.00	$70.00	$1.50[z]	$70.00	$2.00[b]	$80.00	
Baltimore	51.70[f]	45.55[f]	33.25[f]	55.35[f]	65.00[f]	108.50[f]	69.00[f]	1.30	66.50	1.50	45.00	$1.00[g] $33.50
Birmingham	68.90	57.00	47.77	75.00	65.00	136.50	81.00	1.40	70.00	1.60	75.00	3.13[g]
Boston	60.00[m]	50.00[m]	36.00[m]	60.00[m]	65.00	120.00	79.00[m]	1.45[k]	75.00		75.00	5.30 53.50[g]
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00		63.65[f]	5.25[g]
Cincinnati	48.00[w]	42.50[w]	32.05[w]	51.16[w]	70.00[w]	125.00[w]	72.50[w]	1.30[w]	65.00[w]	1.30[w]	76.50[w]	2.25[w] 50.00[w]
Cleveland	62.00[C]	56.50[C]	41.50[C]	65.00[C]	75.00[C]	125.00[C]	80.00[C]	1.35 1.50	72.00		55.00	17.50[g] 55.00
Dallas	55.00	52.50	42.50	60.00	68.75	118.00	68.75	2.00	62.25	1.45	66.15	4.50[g,t]
Denver	62.00	54.50	41.00	62.00	75.90	126.00	74.90	1.50	65.00[q]	1.75[e]	65.00[q]	5.25 48.65[e]
Detroit	66.00	55.00	43.00	65.00	60.50[D]	100.50[D]	60.50[D]	1.00[S]	55.00	1.95[S]	88.00	
Kansas City	65.00	55.00	40.00		72.00	115.00	75.00	1.40	75.00	2.00	75.00	3.60[d] 53.98[e]
Los Angeles	64.00	60.50	0.33½[z]	64.50	75.00	125.00	80.00	76.00[l,e]	82.00	1.35[e]	64.00	4.40[g]
Minneapolis	75.00	65.00	0.41[z]	80.00	78.00	140.00	78.00	2.00[j]	80.00	1.80	80.00	5.50
Montreal	56.00	47.30	36.39	53.00	63.25		63.00	1.50	66.00	1.50	66.00	9.00[g] 56.00
New Orleans	60.00	52.00	45.00	60.00	67.00	130.00	80.00	2.00	65.00[e]			
New York	55.25	47.25	36.25	54.25	75.00	120.00	75.00	1.55[k]	68.50		68.50	1.38[g] 54.50[e]
Philadelphia	55.60	50.35	36.30	52.52	68.73	105.110	55.65		60.70		70.75	5.60 6.34 10.50
Pittsburgh	74.00	65.00	40.00	63.00	62.50	102.50	57.50	1.05[e]	55.00[e]	1.05[e]	55.00[k]	3.80[g] 38.50
St. Louis	67.00	56.50	40.00	70.00	76.00	121.50	80.00	1.35[y]	85.00	1.90	65.00	4.50[g]
San Francisco	57.00	48.00	0.35[z]	58.00	68.00	109.00	67.00	1.60	66.50	1.60	66.50	4.95 55.00
Seattle	68.30	57.65	51.05	65.00	74.50	125.00	73.50	1.60[f]	72.00	1.90[e,p]	50.00[e,f]	4.25 48.50[E]
Toronto	61.00	50.00	38.00	64.50	75.00		75.00	1.50	62.50		62.50	16.00[a] 46.00

•* F.o.b. warehouse. •x Semi thick. •y 30- bag. •z 12" to 24" width. •A 40- kraft paper, 5 Msf, 100 500 rolls. •B 20- sq ft bag, 4" thick. •C Full trailer loads. •D 80- kraft paper backing 400 rolls or over. •E LCL. •F 40-. •G 80-. •H 2". •I 8 to 10 ton quantities. •J Distributor's siding. •K Per Msf roll. •L 32- bag. •M 500 sf. •N Per cwt. •O 35 bag. •P 26# bag. •Q Flame proof $75. •R F.o.b. city. •S Sq. yd. •T 30 bag. •U Spun rock wool. •V 650 sf. •W ton. •X F.o.b. plant, freight allowed. •Y CL. •Z 10 Msf.

MEXICO CITY WAGES & PRICES

Wages, per 8 hr day, av per hr	Feb. '59	Jan. '59
Common labor, building (peons)	1.57	1.57
heavy const (peons)	2.00	2.00
Skilled labor, carpenters 1 cl	3.25	3.25
bricklayers 1 cl	2.57	2.57
struct. ironworkers	4.38	4.38

Pesos, F.o.b. City	Feb. '59	Jan. '59
Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4" per metric ton	2400	2400
Reinf. steel, corrugated rods, per ton		
⅜"-1" x 11 meters	2000	2200
½"-1" x 11 meters	2000	2200

	Feb. '59	Jan. '59
Gravel, truckload at 3½ cu meters		
Blue gravel	84.00	98.00
Rose gravel	75.00	91.00
Cement, std. port. (Tolteca)	240.00	240.00
Lumber, 2x4" pine per M ft	2200.00	1900.00
1½" pine per M ft	1900.00	1900.00

"How we licked problems of clay and steep grades . . . cut costs . . .

doubled production"

As told by
GEORGE BENNETT
President
Bennett Construction Co.
Bethel, Kansas

What's the best and most economical way to boost production when wet clay or steep grades slow your haul units? That's a problem that troubles many dirtmovers!

We think we have a good answer to it here at Bennett Construction Company. We put our Model 380 Michigan Tractor Dozer to work as a pusher on the most critical haul grade or in the wettest spot. It has the advantage of giving us both power (375 hp) and speed (25 mph, forward *and reverse*).

PUSH-LOADING, Bennett's Michigan regularly heaps 25 yd pans in 30 seconds. With 3 scrapers on 2000 ft haul, it averages 45 to 55 loads per hour. All-around visibility, plus rear push-block, permits effective pushing both forward and backward.

Triples uphill speed of haulers

Take our recent 946,000 yard modernization of U. S. 71 north of Kansas City as an example. Here our most critical haul point was a 600 ft access road leading to the top of a 50 x 90 x 1000 ft fill. Maximum grade ran about 35%. Footing often was wet and slippery. Without a pusher, our four 18-yd bottom-dump wagons sure had trouble. With *crawler* assistance, things weren't much better. But with the power-shifted, torque converter Michigan, the upgrade haul went *three times as fast* as the wagons could roll on their own. Michigan also push-unloaded each hauler . . . spread the load . . . then shot right down the steep fill face to save time in getting behind the next wagon.

Equals work-pace of four crawlers

Because of this speed and rubber-tired mobility, we were able to move two big crawlers, formerly assigned pushing work, to other jobs . . . *and still step up the fill operation 100%.* Had we tried to get this increased production *without* the Michigan, we would have needed two crawlers on the hill, plus two on the fill. So we figure the Michigan saved us substantially on operating costs . . . counting everything, about three-fourths!

Michigan "effective in rock"

Of course, we don't expect to save that much with a Michigan *all* the time. But experience shows the Model 380 *speeds practically any dozer job.* It's particularly good in wet clay, rock, or plain old dirt. We think it won't be long before *every* contractor will boost his rubber-tired dozer fleet to *at least* 50-50 with crawler units.

SPREADING FILL, low-pressure tires and all-wheel-drive take Michigan through soft footing. Rig operates so simply, reports Owner Bennett, that "despite labor turnover, we have no trouble getting good operation on the Michigan."

Among his choices—*and yours*—right now—are four Michigans. This 375 hp model—plus 165, 262, *and 600 hp* sizes. Let us show you one in action NOW, so you can judge how soon some of these machines should be added to *your* fleet.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

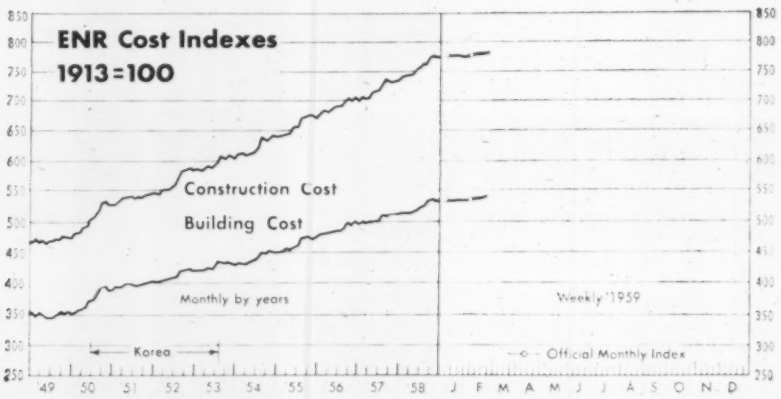
CLARK EQUIPMENT

2401 Pipestone Road
Benton Harbor 25, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Construction Scoreboard

CONTRACTS


ENR Cost Indexes
1913=100
Construction Cost
Building Cost
Monthly by years
Weekly '1959
Korea
Official Monthly Index
'49 50 51 52 53 54 55 56 57 58 J F M A M J J A S O N D

CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Feb. 19 1959	% Change from Jan. 22 1959	% Change from Feb. 20 1958
Construction Cost	780.73	+0.3	+5.0
Building Cost	539.70	+0.7	+4.6

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

By Ownership	†This Week millions	Cum. 9 wks 1959 millions	Cum. 9 wks Chge '58-'59 %
All Heavy Constr.	$285.7	$2,955.6	+21
Private	176.2	1,435.7	+27
Public	109.5	1,519.9	+17
State & Municipal	85.2	1,082.3	+ 4
Federal	24.3	437.6	+66
By Type of Work			
Public			
Waterworks	4.0	77.5	+122
Sewerage	13.9	97.8	+ 6
Bridges*	6.1	102.4	+50
Highways	35.0	419.3	+15
Earthwork, Waterways	3.6	86.1	−15
Building, Excl. Housing	27.4	408.2	+20
Housing	6.8	80.4	−59
Unclassified	12.7	248.2	+249
Private			
Buildings			
Mass Housing	58.7	583.4	+65
Commercial	46.9	383.9	+38
Industrial	62.6	384.0	− 5
Unclassified	8.0	84.4	−17

*Includes private bridges †4 day week

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

. . . CAPITAL

New Capital For Construction	Week of Feb. 19 millions	Cum. 8 wks 1959	Cum. 8 wks Chge '58-'59 %
Corporate Securities	$ 37.0	$511.8	−37
State and Municipal:			
All Except Housing	136.6	802.9	−35
Housing		1.3	+30
Federal Loans	2.6	15.0	−62
Federal Aid	....	....	....
Total Nonfederal	$176.3	$1,331.0	−36
Federal Appropriations:			
Projects in U. S.	....	....	....
Outside U. S.	....	....	....
Total New Capital	$176.3	$1,331.0	−36

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	January 1959 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$111,437	+0.2	+2.2
By Ownership			
Private	49,503	0	+1.7
State & Municipal	50,975	+0.8	+0.5
Federal	13,959	−0.8	−0.2
By Type of Work			
Waterworks	2,691	+1.2	+11.0
Sewerage	3,613	+1.0	+6.4
Bridges	3,361	+0.7	−0.1
Highways	13,070	+1.2	−1.9
Earthwork, Waterways	11,908	+0.02	−3.0
Public Buildings	20,617	−0.2	+2.2
Industrial Buildings	17,071	−0.03	+2.1
Commercial Buildings	22,256	−0.6	+7.1
Unclassified, Private	10,177*	+1.1	+2.7
Unclassified, Public	9,673	+0.6	−0.8

*Includes private bridges, $91 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	Jan. 1959 millions	1-month 1959 millions	Percent Change from '58 Jan.	Percent Change from '58 Year Cum.
Total U. S. (ENR reported)	$1,901	$1,901	+20.5	+20.5
By Ownership				
Private	799	799	+ 1.9	+ 1.9
State & Municipal	983	983	+38.2	+38.2
Federal	119	119	+41.1	+41.1
By Type of Work				
Waterworks	58	58	+106.7	+106.7
Sewerage	77	77	− 17.3	− 17.3
Bridges	118	118	+ 88.3	+ 88.3
Highways	279	279	+ 0.9	+ 0.9
Earthwork, Waterways	51	51	+435.2	+435.2
Public Buildings	312	312	+ 31.0	+ 31.0
Industrial Buildings	171	171	+193.1	+193.1
Commercial: Mass Housing	220	220	− 9.8	− 9.8
Other Building	240	240	− 47.0	− 47.0
Unclassified, Private	167**	167**	+492.1	+492.1
Unclassified, Public	208	208	+118.9	+118.9

**Includes private bridges, $7.5 million

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	$918	$918	+ 18.8	+18.8
By Ownership				
Private	301	301	+ 18.4	+ 18.4
State and Municipal	411	411	− 7.9	− 7.9
Federal	205	205	+188.4	+188.4

How to save time pouring concrete under a low ceiling

Pouring a concrete floor, 80 by 180 feet, may be just an ordinary job—but *not* when it must be done with a ceiling only 10 feet above you. Yet that was the problem they faced in Nashville, Tennessee, recently—and licked! First floor and basement columns of a large building had been poured and in use for several years; now a 6-inch basement floor had to be poured and curtain walls built.

Other machinery too big or too slow

Before starting the job, engineers carefully considered the equipment on hand. Usual mixers and other machines measured too big for basement use. Wheelbarrows or "Georgia buggies" were sure to be too slow and costly. But there *was* one piece of equipment that *might* do the trick. They called a mobile Michigan Tractor Shovel in from loading work, and tried it out.

Michigan proves "extremely maneuverable" between columns

In its test, the Michigan Model 175A received a full bucket load of ready-mix from a transient mixer. With bucket "cradled" in normal low shock-resistant carry position, down the ramp it went into the building's basement. Less than 8 feet high, the Michigan easily cleared the first-floor beams overhead. Load was poured out quickly, carefully—and back out of the basement the Michigan went for another 2¼ yards (struck measure). Power-steered and power-shifted, the Michigan proved extremely maneuverable among the many supporting columns. So, from then on, it was Michigan all the way.

Rough-spreads concrete, too

It wasn't long before the job foreman discovered Michigan could do a good job of rough-spreading the ready-mix, too. Simply by lowering the bucket, holding it under pressure and dragging backwards, the Michigan left the surface ready for the finishing crew. Finger-tip bucket control and unusual maneuverability made this time consuming job a cinch, dispensed with many of the laborers ordinarily needed.

Try Michigan on YOUR problem-job

Everyone gets a "problem-job" from time to time. Maybe *you* have one *now*. If it involves loading or carrying bulk material, we'll wager a Michigan can do it quickly, efficiently, at a minimum cost. But, see for yourself! Won't cost you a penny. Just call your Michigan Distributor, ask him to arrange a demonstration. *You pick the job.*

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2401 Pipestone Road
Benton Harbor 2, Michigan
In Canada: Canadian Clark, Ltd.
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CLARK® EQUIPMENT

State Construction Laws Coming

- **Bills to license contractors and protect them from out-of-state competition are getting wide attention.**
- **Some states will look into administration of highways and public works; others will set new rules for architects and engineers.**

State legislators will start considering bills directly affecting construction men as soon as they finish wrestling with budgets and financing problems (ENR Feb. 12, p. 84).

Topping the list of legislative proposals are bills to license contractors and to protect "in-state" contractors from out-of-state competition.

• **Licensing proposals**—Trade unions and subcontractor groups are urging contractor licensing in Michigan, Ohio, Oklahoma, Missouri, Washington, Oregon and Texas.

Among states having such laws are California, Arizona and Nevada. Hawaii also requires that contractors be licensed.

Tennessee contractors bidding on projects of more than $10,000 currently must be licensed by the state. Now some legislators want to amend the existing law to require licenses for contractors bidding on jobs of $100 or over. Passage appears unlikely, however.

The Washington legislature will consider bills to license heavy construction and building contractors and subcontractors. If passed, a seven-man board appointed by the governor would grant licenses in three categories—general engineering contracting, general building contracting and subcontracting. Exemptions would be granted only to persons using less than $100 worth of building materials on any one job.

Supporting the measure are plasterers, pipefitters and painters. Opposed are roofers and the state chapter of the Associated General Contractors.

A similar bill is before the Wyoming House of Representatives. It would set up a three-man commission to issue licenses in three categories:

- Class A license, permitting a contractor to undertake any size public works job.
- Class B license, permitting a contractor to take jobs under $50,000.
- Class C license, limiting a contractor to jobs under $25,000.

Violators would be punished by a $500 fine or a six-month jail sentence.

In California there are six proposals to tighten or expand coverage of its licensing laws. The proposals would:

- Prohibit cities and counties from issuing building permits to unlicensed contractors, unless they are exempt from the state licensing law.
- Fine unlicensed contractors a minimum of $100 for a first offense. Succeeding offenses would draw a minimum fine of $300 and 10 days imprisonment.
- Prohibit any political subdivision from licensing a contractor who is licensed under the state law.
- Discipline contractors who refuse to open their records for the Contractors' State Licensing Board.
- Require licensed contractors to file a bond with the board as guarantee of wage payment to employees.
- Require property owners who act as their own contractor on the building or remodeling of structures under lease, or to be leased, to obtain a contractor's license.

• **Contractor protection**—Four states—West Virginia, California, Minnesota and Wyoming—are considering legislation to protect contractors in their states from competition of out-of-state contractors.

In California, there is a proposal to give preference on public works contracts to contractors who are licensed in California, pay taxes in the state or who purchase California-made materials.

Minnesota state legislators are sponsoring a bill "to put Minnesota contractors on an equal basis with North and South Dakota contractors in bidding on public contracts." The authors of the bill say both the Dakotas have preference laws that give resident contractors a 2% advantage over out-of-state contractors.

The Minnesota bill would subject out-of-state contractors to a percentage handicap equal to the preference given them in their home state. One purpose of the bill is to make the Dakotas repeal their preference laws, according to a sponsor.

A bill before the Wyoming legislature would re-define the word "resident" as it is used in the present law giving resident contractors a 5% bidding preference on public works contracts. The new bill would require that to qualify as a "resident," a majority of the stock in the contracting firm must be held by persons who have lived in the state at least one year. This would eliminate the practice of establishing a branch office in the state to take advantage of the existing preference law for resident contractors.

• **Contractor taxation**—The West Virginia House of Delegates unanimously passed a bill to extend a 2% use tax on out-of-state purchases to contractors temporarily working in West Virginia. If the Senate approves the bill, contractors will have to pay the tax on the purchase price of equipment brought into the state. A 10% allowance will be made on equipment used more than one year in another state.

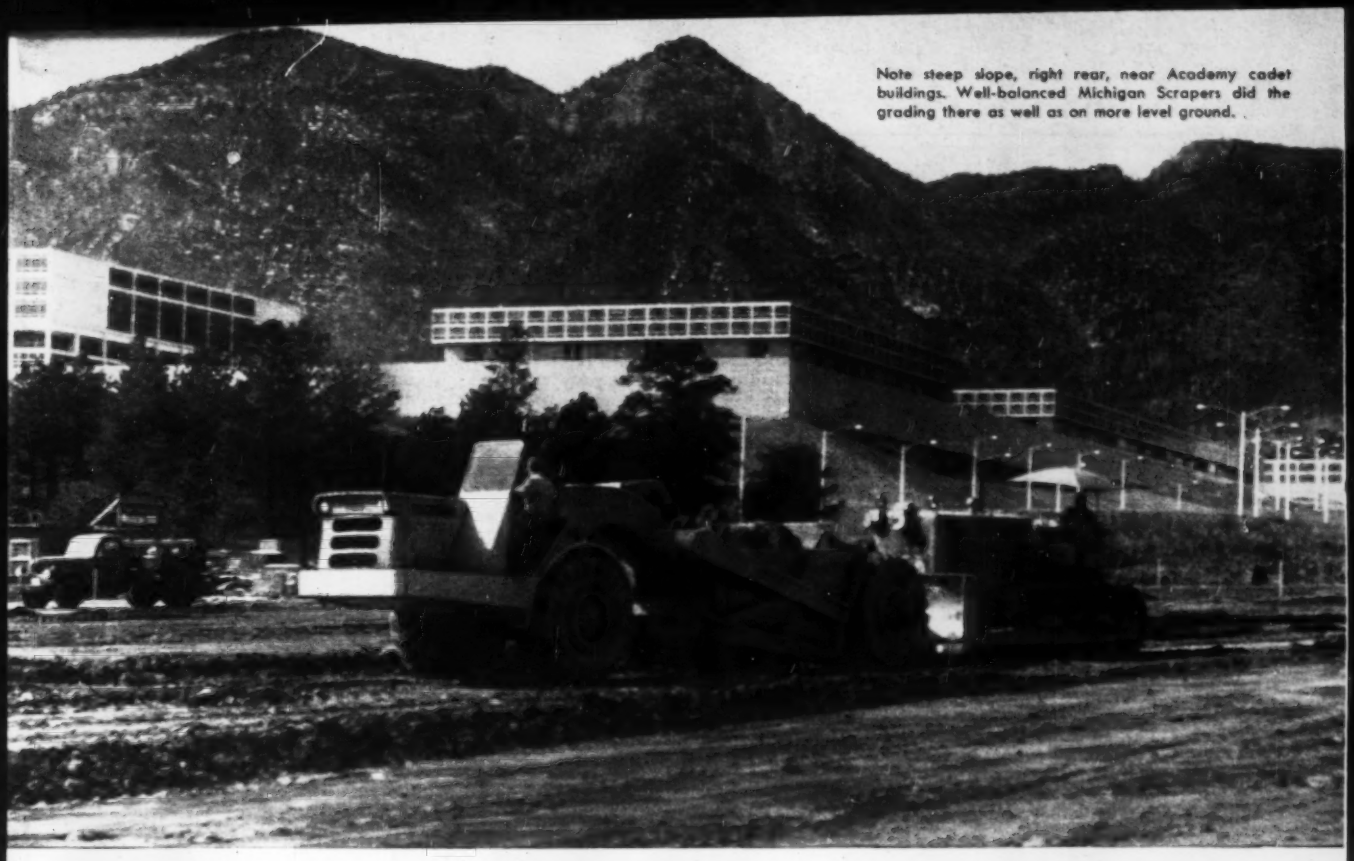
Another bill would remove exemption of state contractors from West Virginia's 2% sales tax.

New York and Arkansas may consider additional laws to regulate bidding procedures.

New York State Comptroller Arthur Levitt proposes a plan he says will "end favoritism, improvidence, extravagance . . . and fraud" in municipal purchasing and local public works contracts.

He asks for a change in the present state law requiring local governments to seek competitive bids on purchases or public works contracts over $1,000. Some municipal officials, Mr. Levitt says, get around this requirement by splitting contracts into less-than-$1,000 segments. Mr. Levitt wants the statute amended to prevent the practice.

(*Turn the page*)



Note steep slope, right rear, near Academy cadet buildings. Well-balanced Michigan Scrapers did the grading there as well as on more level ground.

Extra capacity pays off on scattered landscaping at Air Force Academy

MICHIGAN SCRAPERS UP OUTPUT 20%

How would you handle a contract where your work was scattered over 17,800 acres? Where you had to move 5,000 yards here, 25,000 there, 10,000 there? Where you had to work across paved highways, at high altitudes, often on steep slopes?

These were the problems faced by C. S. Jones, Palmer Lake, Colorado, on his contract to landscape and do erosion control work throughout the huge, new Air Force Academy grounds near Colorado Springs. "A natural for small self-propelled scrapers," you say. Well, Contractor Jones agreed!

9 pay yds vs. 7 or 8

He asked for a series of demonstrations. Four dealers brought out their machines. Three machines had 9 to 9½ yard pans . . . the fourth, a Michigan Model 110, put through its paces by Western Machinery Co. of Denver, heaped 10½ yards. A great many loads were weighed . . . many cycles timed. The winner? Michigan! On both counts! Its greater capacity reflected in greater payloads . . . an average of 9 pay yards per weighed load compared to an average of 7 to 8 pay yards for the other machines. And its torque converter-power shift drive resulted in higher average speeds on the hilly hauls.

Today, Mr. Jones has two Michigan Model 110's working continually on his big job. They drive everywhere under their own power . . . travel "fast as trucks" over pavement or cross-country from one site to another.

Fast out of cut, up hills

"We're getting some other advantages from the 162 hp Michigans too," says Jones. "They load extremely fast and well . . . with 100-plus hp pusher, at 7,000 ft altitudes, in typical sandy clay material, in only 20 to 45 seconds. They get out of the pit fast. And they're awfully fast on the hauls."

Four-wheel air brakes, power steer permit safe 30 to 35 mph downhill speeds. Uphill loaded, the Michigans averaged 5 to 10 mph.

Extra profit, 2 to 3c per yard

"Counting all these things," concludes Jones—"the fast loading, the extra yard or two per load, the fast haul—I'd say these Michigans have boosted production 18 to 20% over what we'd get with other make scrapers in this size and price class. On most of our hauls, that means an extra profit of 2 to 3c per yard!"

The job pictured is typical. Here, the Michigans were leveling a parking lot, carrying material up a 10% grade, then filling low spots near a highway. Average 3,000 ft cycles took 4 minutes. Output per Michigan averaged 135 pay yards per hour.

Sound good? We'd like to *prove* Michigans *are* good! Before *you* buy your next scraper, do what Mr. Jones did . . . test a Michigan on *your* job, with your own operators. You name the time and place—and the Michigan Scraper you want to see . . . this 10½ yard size, or the bigger 19 or 29 yard models.

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Construction Machinery Division
2401 Pipestone Road
Benton Harbor 23, Michigan

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. . . State legislation covers many phases of construction

(Continued from page 84)

Chances for repeal of a 1957 Arkansas law permitting package bids seem poor, but some amendments have been suggested. One calls for advertising separate bids, with the qualification that there would be a prime contractor in a particular category. After separate bids were opened, a prime contractor would be chosen and a single contract awarded equal to the total of the selected bids.

• **Protection from bribery**—The Board of Supervisors of Erie County and the City Council of Buffalo are urging the New York State legislature to penalize contractors who refuse to waive immunity in testifying before a grand jury investigating public contracts.

They recommend that any contractor refusing to waive immunity be barred from bidding on state or local contracts. The resolution is "to protect the public from unscrupulous contractors" who may have offered bribes to public officials to obtain contracts.

• **Engineers and architects**—Three states Colorado, Idaho and Wyoming—are debating legislation that would affect engineers or architects.

The Colorado legislature is making another attempt to adopt an architect licensing law. The original 1909 law was declared unconstitutional in 1953 and the same fate met another passed in 1955. The new proposal is backed by architects.

The Idaho Senate is being urged to pass a bill that would permit professional engineers to practice through corporations and joint stock associations. It would permit such firms to practice engineering or land surveying if the chief executive officer and a majority of the board of directors are registered engineers. The Idaho Society of Professional Engineers endorses the measure.

A bill before the Wyoming House of Representatives would prohibit professional engineers, employed full time by the state, from active participation in political campaigns.

• **Highways**—Reimbursement of utility companies for the cost of relocating their facilities from highway rights-of-way is also up for action in some state legislatures.

Ohio, Washington and Texas legislatures will deal with the costs of utility relocations during their present sessions.

The Ohio Highway and Turnpike Association expects defeat of any bill that would make the state pay for moving utility lines in the path of new interstate highways. Reason: It is estimated that relocation would cost the state $120 million. Although this cost is covered by federal-aid funds, state officials say some highway-user taxes would have to be raised in order to cover both the added cost of utility relocation and completion of the highway net as planned. Under current law, utilities must pay the cost of moving their facilities from highway rights-of-way.

Approval seems likely for a bill now before the Washington legislature that would reimburse private utilities for the cost of relocating their lines as a result of highway construction.

A legislative battle may be looming in Texas on the same issue. The State Highway Commission opposes such payment, which was authorized by the previous legislature. The commission argues the practice is a drain on its construction funds. The law has been upheld by Texas courts. Now the highway commission may ask the legislature to bar utilities from using, without charge, property along highways.

A conflict with federal highway design requirements developed in Wyoming. The state legislature passed a law requiring a yellow center line stripe on the highways.

The U. S. Bureau of Public Roads has advised state highway department officials that the measure could create serious obstacles to approval of federal aid for interstate highway projects. The federal law established uniform standards, which include white center line markings on interstate highways.

• **Hoping for savings**—Many state legislatures are considering measures to save money in the operation of their highway and public works agencies.

Rising costs of right-of-way acquisition in New Mexico are the target of a bill introduced in the state legislature. It would prohibit payment of state funds on any contract signed after July 1, 1961, until all necessary lands and rights-of-way along an entire route have been acquired. It would also permit the state highway department to obtain a change of venue in condemnation suits and other land acquisition cases. State laws at present require such suits to be tried in the county where the land is sought. Apparently, local juries tend to be generous with the state's money in paying their neighbors for preempted land.

Gov. Foster Furcolo of Massachusetts recommends creation of a Massachusetts Transportation Authority. It would coordinate the activities of the Massachusetts Port Authority, the Metropolitan District Commission, the Boston Traffic Commission and the State Department of Public Works.

In Georgia, the general assembly abolished the State Toll Bridge Authority, the Rural Roads Authority and the Bridge Building Authority. This is expected to reduce administration costs by eliminating duplication of effort.

However, Gov. Ernest Vandiver vetoed the measure abolishing the Toll Bridge Authority and transferring its functions to the state highway department.

• **Schools**—Delaware, Massachusetts, Missouri, Pennsylvania and Washington legislatures are considering financial and administrative changes for their public school systems.

Some Delaware lawmakers are urging creation of a Public School Construction Commission. The new agency would control and supervise the planning, designing, locating, constructing and remodeling of all public school buildings. It would also rule on the necessity of any proposed school construction and land purchases and rentals for school use.

Governor Furcolo of Massachusetts recommends a study of school construction costs. He asks that "schools be built for educational purposes, not as monuments to architectural genius."

A legislative spokesman for Governor David Lawrence of Pennsylvania says, "All non-essentials should be eliminated from Pennsylvania's heavily-subsidized school building program." Main criticism is being aimed at the State Public School Building Authority. Some groups suggest that it be eliminated.

The Missouri legislature is considering a proposal to place fire inspection of all schools under state control. The state would have the power to order the elimination of any existing hazardous conditions.

The Washington legislature is considering a bill that would require at least a one-hour fire rating for all construction materials used in school walls, partitions, ceilings and corridors. A similar bill failed to pass the 1957 legislature. The State Board of Education opposes the measure, charging that it would "unnecessarily increase the costs of school construction."

Also before the Washington legislature is a bill that would require standardization of school construction by purchase of stock plans. This bill is also opposed by the Board of Education.

State Labor Bills a Hodgepodge

- **While most states are pushing for new laws, few of the proposals are designed to bring long-range solutions to chronic problems.**
- **But labor legislation is being approached soberly in a changing political climate. The big problem: Unemployment.**

Local labor legislation is back under the spotlight as state legislatures move into action.

The hoppers are full. In California alone, over 148 labor bills have been introduced.

From state to state, the labor proposals cover the same ground, but with different proposals. Out of the common denominators six significant things emerge:

- Unemployment is still a critical problem on a nation-wide scale.
- The general political atmosphere is one of sober, if not constructive, approach to problems simultaneously affecting the interests of labor, management and the public.
- Despite the headlines made by the McClellan committee, anti-labor sentiment is neither strong nor prevalent.
- Organized labor is not attempting to capitalize on its political victories of last November.
- The big issue of state versus federal labor standards in common problems—such as unemployment insurance, workmen's compensation, prevailing and minimum wages and radiation safety—is coming into sharper focus as the states haggle and flounder over problems both old and new.
- With few exceptions, only patchwork solutions to most of the states' chronic labor problems are in sight.

Labor subjects now getting the most attention are jobless insurance, workmen's compensation, union corruption, right-to-work laws, minimum wages, prevailing wages, the right to strike and the right to picket, mediation and the issuance of injunctions.

• Changing times. On most issues, the proposals, counterproposals and debates are neither new nor extreme. Yet an analysis of pending bills indicates the temper of the times is changing.

Look, for example, at the issue of compulsory unionism, more aptly known as the union shop, which has usually found its staunchest supporters in the liberal ranks.

Although traditionally close to the hearts of anti-unionists, new right-to-work proposals outlawing the union shop have been introduced in only four states, while efforts to repeal the present laws (now 19 in all) are under way in three states.

Republicans in the state of Washington have just approved a resolution opposing any new right-to-work proposals. Vermont's Republican governor, Robert Stafford, says he will vote against such a proposal if it appears on his state ballot.

And political observers feel that Iowa's now indecisive Republican controlled legislature will repeal that state's right-to-work law if the national Republican leadership takes a strong stand against such laws. Indiana's House has passed and sent to the Senate a bill to repeal its right-to-work law.

Similarly, efforts to turn union corruption into a political heyday are few and far between. The issue was raised in fewer than 10 states. Governors in California, New York, Ohio and Idaho, and Republican minorities in Washington are urging state legislation along the lines of the reform provisions of the federal Kennedy-Ervin bill. Minnesotans feel there is no need for such a law in their state; both Republican and Democratic leaders in Missouri are saying, "Let the federal government handle it." And Idaho's Gov. Robert Smylie, a Republican, warns against use of such legislation to serve as a cloak for union busting.

And from the South traditionally hostile to the union movement—comes gubernatorial backing of a labor-endorsed prevailing wage proposal. Gov. Orval Faubus of Arkansas is supporting a bill that would require contractors on all projects undertaken by the state, or any county or city, to pay not less than the prevailing wages, as set by the State Labor Department, on projects of $10,000 or more.

In Minnesota, conservatives have failed to muster enough support to block tentative House approval of a permanent extension of the state's temporary prevailing wage law.

• No startling proposals. In the field of general labor legislation, the political climate is about the same.

The ticklish problem of secondary boycotts—a highly explosive issue at the federal level—is getting almost no attention.

Strike action and picketing are getting some attention, but the proposals are pretty much run-of-the-mill. A Connecticut bill would outlaw "coercive or violent picketing," but an Oregon proposal would repeal a 1953 law restricting organizational picketing. Missouri and New Jersey bills would repeal state laws prohibiting strikes by utility workers, but a Connecticut bill would ban such strikes until after a 30-day notice is given. A North Dakota bill would require a 90-day notice of intention from any union to strike and from any employer to engage in a lockout.

Other proposals, largely from union camps, are just as prosaic.

Efforts to extend collective bargaining rights to public employees are under way in California, Utah and Oregon. A Fair Employment Practices Act is sought in California. Employment discrimination because of age would be banned by bills pending in Washington, Wisconsin and New Jersey. A Wyoming bill would give paid time off for voting and a California proposal would grant full pay for jury service. A Colorado bill would make it easier for a union to win a certification election and to get union shop authorization.

Proposals from antilabor groups for the most part contain nothing new or startling. A contractor-sponsored bill in Arkansas would make unions amendable to law suits. A South Carolina proposal, like a number of ill-fated county ordinances, would require state licensing of all union membership solicitors.

Between these two broad areas are a host of proposals embracing administrative and procedural improvements in state labor departments, new or im-

proved mediation services, and technical perfections in existing labor laws.

Much of the latter is devoted to the injunctive process, under which courts can summarily order a halt to various union or employer activities.

A Maine proposal would enable the State Supreme Court to review immediately the granting or denial of any temporary injunction in a labor dispute. A North Dakota bill would allow both labor and management a full hearing before an injunction could be granted. And in California, Gov. Edmund Brown would repeal the injunction provisions of the state's Jurisdictional Strike Act, provided new machinery is established for handling such disputes.

• **Help for the jobless**—The big problem facing the states—and the only one receiving almost universal attention—is that of unemployment benefits and the taxes to support them.

Pending bills in three-fourths of the states indicate that the Federal Temporary Unemployment Compensation Act passed by Congress last year is not the answer. (President Eisenhower is now opposed to an extension of the law—not because of this but because it is not necessary "on a curve of rising prosperity.")

Bills introduced in 34 states all seek to liberalize benefits and to improve the state systems—but only a few of the proposals have anything else in common.

Some states would boost maximum weekly benefits—up to $30 in some cases, up to $70 in others—but still retain the inflexible, predetermined amounts. Proposed extensions of benefit periods range from a low of 26 weeks in Florida, North Dakota and Arkansas to 39 weeks in Kentucky and Connecticut.

Elastic benefits are being urged in nine states. These would be pegged at one-half or two-thirds of average weekly earnings (either those of the claimant or a state average). They are also seeking more realistic duration periods—unlimited in Michigan, or for the life of an "economic recession" in California, Missouri and Vermont. (Under a typical formula, a recession would be deemed to exist when 7% of the state's work force is unemployed.)

Proposals in a number of states would raise the base for taxes paid by employers anywhere from the present $3,000 to $4,800. Some Vermonters have proposed a new and novel tax of ½ of 1% on employees.

A few states would encourage part-time work for idle workers by allowing them to earn small sums without prejudicing their right to full state benefits. Some states are still trying to legalize simultaneous receipt of state and private (SUB) benefits. Others are still toying with the idea of participating in last year's federal loan program. And some are still wrestling with the question of granting or denying benefits to people idled by labor disputes.

The same diversity of opinion shows up in the fields of workmen's compensation and minimum wages.

Upgrading of benefits is the big compensation problem for most states, but 20 proposals now before local legislatures vary in amounts and in compensable injuries. Some scattered effort is being made to minimize compensation costs and to protect injured workers from unscrupulous lawyers. And a proposed Rhode Island study would compare the merits of the present system of private insurance with the creation of a state compensation fund from which benefits would be paid.

Eighteen states are again facing the problem of minimum wages. Of these, five have not yet caught up with the old 75-cent federal minimum wage, and in only one state has it been suggested that the state minimum be pegged automatically to the federal one.

How Gray Sees Pre-Hire Pacts

The pre-hire labor contract and union certification without election proposals now before Congress have the same end in view: to make it possible for construction unions and union contractors to operate efficiently on construction jobs.

This was asserted in testimony before the Senate Labor Subcommittee last week by President Richard J. Gray, titular head of the AFL-CIO building trades unions. Mr. Gray called the pre-hire method the better one for the public, for labor and for contractors.

The pre-hire contract proposal is in Title VI of the Kennedy-Ervin bill, which was approved last week by the Senate Labor Subcommittee. It has been opposed by the Associated General Contractors and the National Association of Home Builders. They have recommended certification without election (a proposal in the Administration labor bill) as the better method.

• **The problem**—The purpose of both proposals is to enable unions and contractors to conclude lawful collective bargaining agreements before many, if any, of the workers are hired.

The argument is that the employment turnover of the various trades on a construction job is so fast and great that no stable or permanent workforce is assembled as in factories and commercial establishments. As a result, it is usually impossible to hold a National Labor Relations Board election to determine what union, if any, should represent the workers.

The hitch, of course, is that valid collective bargaining agreement can exist only if the union has been certified as the bargaining agent. And in the absence of a labor contract, cost estimates, labor recruiting and even labor peace become hit or miss operations.

The industry has avoided this chaos by operating illegally, Mr. Gray said. In fact, pre-hire agreements are common. They have been allowed to stand because the law has not been enforced.

The Kennedy-Ervin bill would legalize this activity. The Administration bill would let the NLRB certify unions without an employee vote and this, in turn, would legalize pre-hire agreements.

• **Pre-hire argument**—The pre-hire method "strikes the most sensible balance between the economic needs of the industry and the preservation of freedom of choice by the employees," Mr. Gray said.

He pointed out that the Kennedy pre-hire proposal protects the rights of workers in three respects: It still makes employment discrimination based on nonunion membership illegal; it preserves the right to seek decertification; and it retains the right to authorize or deauthorize a union shop clause.

In contrast, Mr. Gray said, the certification without election procedure affords only illusory protection. It would not upset a "sweetheart" agreement as a bar to a certification or decertification election. At the time of the certification there would not be a "substantial number of employees" at work who could contest it, and the NLRB could not later upset its earlier certification to accommodate the wishes of subsequently employed workers.

And it would virtually be impossible for employers without a prior history of bargaining to use the certification method, Mr. Gray noted.

He said certification—unlike the pre-hire method—would have an "adverse effect" on the "splendid job" being done by the National Joint Board for the Settlement of Jurisdictional Disputes.

Twice in the past, Mr. Gray noted, the Senate has approved the pre-hire method. He recommended its adoption by the present Congress and urged early consideration in separate legislation of "other problems of complex character" created by the Taft-Hartley Act.

Labor Patches Conflicts, Raises Goals

The battle lines between liberals and conservatives on the nation's economic and political fronts were thrown into sharper focus last week as a result of decisions reached by the AFL-CIO Executive Council. At the same time, the conflict between craft and industrial unions was eased.

Holding its mid-winter meeting in San Juan, Puerto Rico, the council announced these decisions:

- An increase in efforts to get a shorter workweek.
- Withdrawal of its support of the Kennedy-Ervin labor reform bill unless the controversial Taft-Hartley amendments are retained.
- Increased pressure on Congress to raise the federal minimum wage level from $1.00 to $1.25.
- Renewal of its effort to get federal enactment of an unemployment compensation law requiring state adherence to minimum standards.

The council speaks for 13.5 million members who belong to 137 affiliated unions.

In two other areas closely affecting the interests of the building trades unions, the tide of labor unity was running strong during the first week of the council's two-week meeting.

The case of Maurice Hutcheson, general president of the carpenters union, showed signs of peaceful settlement. Mr. Hutcheson, who faces possible loss of his council seat, again failed to appear before the council to defend his position as a union officer in an Indiana land scandal. At week's end, it looked as if the council would accept a reported pledge from Mr. Hutcheson to investigate corruption within his union in lieu of any punishment that might make the union bolt the federation.

On another front, the tension between craft and industrial unions over conflicting jurisdictional claims to industrial construction work eased materially. The orderly processing of a few remaining disputes that failed of settlement at the lower levels, and stronger sentiment in favor of the craft position, indicate that the jurisdictional conflict has lost its strength as a force to wreck the merger.

Following these developments, Richard Gray, head of the building trades unions, said, "Things look pretty good." Mr. Gray is not normally this optimistic about the future prospects of his department in the merged federation.

The most positive victory for the building trades unions occurred in the council's position on labor reform legislation. The result may delay if not defeat any reform legislation being passed this year.

The council said that "every reform bill introduced contains, and must contain, certain Taft-Hartley revisions," including "provisions needed to reconcile Taft-Hartley with long-established hiring and collective bargaining practices in building and construction."

AFL-CIO President George Meany made it clear that the federation will not support any reform legislation that does not contain some Taft-Hartley amendments.

And Mr. Gray said his department "will fight" any bill without Taft-Hartley changes authorizing pre-hire labor contracts and a seven-day union shop clause.

The prevailing union sentiment is that its bargaining strength with the Democratic Congress is too good to be wasted. Some AFL-CIO officials, however, seem willing to sacrifice the Taft-Hartley changes to get reform legislation.

(Since the announcement of the AFL-CIO labor reform position, the Senate Labor Subcommittee has approved the Kennedy-Ervin bill and three new bills have been introduced.)

The economic proposals of the AFL-CIO are just as provocative and promise to complicate the headaches that lie ahead in collective bargaining.

The federation has recommended that each of its affiliates urge their members to press for "substantial increases in wages."

"We are definitely headed for an economic collapse," Mr. Meany explained, unless the purchasing power of the people keeps ahead of the nation's output.

All unions were urged, at the same time, to "turn attention to getting shorter workweeks." This is a reflection of the federation's concern over the decrease in job opportunities caused by technological improvements and automation, and over what it considers a sharp upturn in productivity.

A current indication of the necessity for a combination of higher wages and shorter hours, Mr. Meany said, is the fact that production has risen 76% since the recession low, while employment has risen only 26%.

Legal

Liability on Construction Jobs

The law imposes on every contractor at a construction project the duty to use reasonable care not to injure either his own employees or the employees of other contractors. And each contractor is liable for the negligence of his employees when acting as agents of the contractor.

The extent of the liability is illustrated by an Ohio case, which involved a school project on which several contractors were working.

An employee of the electrical contractor, while carrying a carton of electrical fixtures down the basement stairway, tripped on an electric cord that had been placed on the stairway by one of the employees of the plumbing contractor. He fell and sustained serious injuries. An action was brought against the plumbing contractor to recover for the damages and the injured employee obtained a judgment which was affirmed on appeal.[1]

The appellate court stated: "The rule as to the duties owing in such a situation is stated in 57 C.J.S., Master & Servant, Section 610, as follows: 'Where two or more independent contractors * * * are engaged in work on the same premises, it is the duty of each contractor, in prosecuting his work, to use ordinary and reasonable care not to cause injuries to the servants of another contractor; and an employee of one contractor may recover against another contractor for injuries caused by the negligence of the latter contractor, or of his employees acting within the scope of their employment'."

The appellate court held the evidence supported the conclusion that the injuries in question resulted from negligence on the part of the employees of the plumbing contractor.

(1) McGeary v. Reed, 151 N.E. 2d 789, Court of Appeals of Ohio, Feb. 20, 1958.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: March 12, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 12th day of March 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; G. L. NICKERSON, District Engineer, 453 Broadway, Albany 1, New York.						
Schenectady	FATC 59-1	City of Schenectady: Crosstown Connection, F.A.C. 57-18 Schenectady Crosstown Connection Pt. 2, F.A.S.H. 57-20 Project U-323(16)	1.99	Traffic Signal Devices	$4,500 Plans $5	$80,000
Schenectady	FATS 59-3	City of Schenectady: Crosstown Connection F.A.C. 57-18 Schenectady Crosstown Connection Pt. 2, F.A.S.H. 57-20 Project U-323(17)	1.99	Traffic Signs & Delineators	$600 Plans $5	$11,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Hamilton & Essex (Rte. 28N)	FARC 59-15	Long Lake-Grove, S.H. 818, Newcomb-Long Lake Pt. 2, S.H. 5188 Newcomb-Long Lake Pt. 1, S.H. 5188 Project S-210(2)	9.19	Asphalt Conc. Type 1A Pavt. = 9.16 Mi. Misc. Work = 0.03 Mi.	$100,000 Plans $5	$1,764,000
Oneida	FASS 59-6	Henderson Street (Co. Rd.) Project S-537(1)	0.75	Asphalt Concrete Pavement	$12,000 Plans $5	218,000
DISTRICT No. 4; B. E. PERRY; District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Int. Tour. Rte. 490)	FITS 59-2	Interstate Route Conn. 590 (Rochester-Bushnell Basin Pt. 1 and Pt. 2, FASH 54-1 & FISH 56-9) Project I-1107(9)	6.69	Traffic Signs and Delineators	$1,500 Plans $5	$79,000
Wyoming (Rte. 19)	FARC 59-16	Pike-Gainesville, S.H. 8121 Project S-177(3)	4.66	Asphalt Conc. Pavement	$24,000 Plans $5	437,000
DISTRICT No. 6; JAMES H. THOMAS, District Engineer, State Office Bldg.; 30 West Main Street, Hornell, New York						
Steuben (Rte. 36 & 248)	FARC 59-11	Hornell-Canisteo, S.H. 5212 Canisteo-Jasper, S.H. 5348 Canisteo-Whitesville Pt. 1, S.H. 5537 Project F-367(5); F-477(3)	2.26	Asphalt Conc. Pavement Rehabilitation of 2 Exist. Bridges	$72,000 Plans $5	$1,307,000
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Columbia (Rte. 9)	FARC 59-13	Stottville, S.H. 619 Stottville-Stuyvesant Falls, S.H. 5103 Project F-368(11)	2.44	Asphalt Conc. Pavement	$12,000 Plans $5	$211,000
Ulster (Rte. 28)	FARC 59-17	Ulster-Delaware Pt. 3, S.H. 31 Project F-659(7)	4.27	Asph. Conc. Pavt. = 4.25 Mi. Misc. Work = 0.02 Mi. Prestress. Conc. Beam Viaduct 15 Span 1080', Prestress. Conc. Beam Bridge 4 Span 224.4'	$128,000 Plans $5	2,324,000
DISTRICT No. 9, JOSEPH C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Otsego (Rte. 166)	FARC 59-14 FASH 59-6	Milford-Roseboom, S.H. 8226, Cherry Valley-Roseboom, S.H. 786; East Springfield-Cherry Valley, S.H. 934; Cherry Valley-Sharon Springs-Sharon Springs-Canajoharie Pt. 1, S.H. 8063 Cherry Valley-Sprout Brook Pt. 1A Project F-385(3)	6.60 (0.16 Acc.)	Asph. Conc. Pavt. = 6.60 Mi. (0.16 Mi. Asp. Conc. on Access Work)	$80,000 Plans $5	$1,152,000
Sullivan (Rte. 17)	T.S. 59-4	Monticello-Liberty, Pt. 2, S.H. 5322 Liberty Village, S.H. 5296 Liberty-County Line, S.H. 5223	6.13 (4.56 Acc.)	Traffic Signs and Delineators	$3,200 Plans $5	57,000
DISTRICT No. 10, M. E. GOLL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Suffolk	SSPRC 59-1	Southern State Parkway (Wellwood Avenue to Udalls Rd.)	6.11 (4.67 Acc.)	8" Cem. Conc. Pavt. (With Carbon Black) 2 @ 37' Var. Wide = 5.83 Mi. 8" Cem. Conc. Pavt. Var. Wide = 4.46 Mi. Asph. Conc. Pavt. = 0.26 Mi. Misc. Work = 0.23 Mi. Lengthen 3 Exist. Mix Sepa. Rigid Frame Arches By 1 Span Each 69.3', 69.5' and 66.6' Widen 2 Exist. Hy. Sepa. Rig. Frame Arches 50.0' and 69.2' Spans 1 Hy. Sep. Rig. Frame Arch 2 Spans 143.2' 1 Br. Rig. Frame Arch 32.2' Span	$100,000 Plans $10	$6,929,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 11, "Prevailing Rate of Wages," Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: March 19, 1959.

New Jersey Turnpike Authority

CONTRACT NO. R-31

Proposals are invited for Contract No. R-31 which involves the construction of a median barrier and other incidental work in the median and on the inner shoulders of the New Jersey Turnpike between Mile 101 in the City of Elizabeth and Mile 107 in the City of Newark, all in Union and Essex Counties, New Jersey:

The principal items of work include:

Galvanized or Painted Double Guard Rail Median Barrier	16,000 lin. ft.
Galvanized or Painted Single Guard Rail Median Barrier	13,000 lin. ft.
Concrete Median Barrier	1,900 lin. ft.
Macadam Median Surfacing	24,000 sq. yds.
Single Bituminous Surface Treatment	34,000 sq. yds.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of March 19, 1959, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after February 26, 1959, at the office of the Authority. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract Documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5160) will be received at the Uintah County Courthouse, Vernal, Utah, until 2 p.m., Mountain Standard Time, April 1, 1959, for furnishing labor and materials for Stanaker Dam, Vernal Unit, Utah, Central Utah Project. Location near Vernal, Utah in Uintah County. Principal items are: 1,870,000 cu. yds. excavation; 1,880,000 cu. yds. embankment; 1,250 cu. yds. concrete; and other work. Completion time 600 days. For particulars, address Bureau of Reclamation, 64 East Main Street, Vernal, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

READ THE OFFICIAL PROPOSAL COLUMN OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: March 26, 1959.

Power Authority of the State of New York

For the Furnishing and Delivery of Gantry Cranes and Traveling Crane for Tuscarora Power Plant
Specifications No. PA-N-23022
Niagara Contract No. NP36

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Furnishing and Delivery thereof f.o.b. University Siding, Tuscarora Power Plant area, Niagara Falls, New York, of the Gantry Cranes and Traveling Crane for the Tuscarora Power Plant in Lewiston, Niagara Country, New York, until 10:30 A.M., Eastern Standard Time, on the 26th Day of March, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York at which time and place proposals will be publicly opened and read aloud.

Bids will be received for one 150 ton and one 65 ton gantry crane, and one 100 ton traveling crane and associated equipment.

Delivery of the equipment will be required beginning March 1, 1960.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid for that schedule which has the highest gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: March 24, 1959

Contract PN-540.003

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS 195, 196, 197 & 198
PAVING, UTILITIES AND TRACKS

Sealed proposals for the construction of pavement, utilities and tracks for Buildings 195, 196, 197 and 198 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 24, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, February 26, 1959

Bids: March 24, 1959

Notice to Contractors

Washington State Highway Commission
Department of Highways
Olympia, Washington
February 10, 1959

Sealed bids will be received by the Washington State Highway Commission at Olympia, Washington, on Tuesday, March 24, 1959, until 10:00 A.M. and will then and there be opened and publicly read for the construction of the improvement listed below.

Bid proposals delivered in person will be received only at the Reception Desk located on the first floor of the Transportation Building.

All bid proposals shall be accompanied by a bid proposal deposit in cash, certified check, cashier's check or surety bond in an amount equal to five per cent (5%) of the amount of such bid proposal. Should the successful bidder fail to enter into such contract and furnish satisfactory performance bond within the time stated in the specifications, the bid proposal deposit shall be forfeited to the State of Washington.

Prequalification of bidders is required. Maps, plans and specifications may be obtained from this office upon written request therefor and payment to the Director of Highways by cash, certified check, cashier's or money order in the sum of fifty-two dollars ($52.00) for each copy of such maps, plans and specifications. Two dollars ($2.00) of the above amount is a rental payment for the use of the maps, plans and specifications and is not returnable. The remaining fifty dollars ($50.00) is a deposit on the maps, plans and specifications and will be returned to the planholder providing the maps, plans and specifications are returned to this office not later than ten (10) days from the date of award of the contract.

IF PAYMENT IS MADE BY CERTIFIED CHECK, CASHIER'S CHECK OR MONEY ORDER, PLEASE MAKE PAYMENT IN TWO CHECKS, ONE FOR TWO DOLLARS ($2.00) AND ONE FOR FIFTY DOLLARS ($50.00). Plans will be forwarded by First Class Mail.

Informational copies of maps, plans and specifications for the Second Lake Washington Bridge, Unit 1—Floating Structure are on file in the office of the Chief Consulting Engineer for the Washington Toll Bridge Authority, 3201 Fremont Avenue, Seattle, Washington, the Chapter Offices of the Associated General Contractors of America in Seattle, Spokane and Tacoma, Washington, and Portland, Oregon, the offices of the District Engineers of the Department of Highways and the office of the Director of Highways where they may be inspected.

The improvement for which bids will be received follows:

1. Constructing a Reinforced Concrete Floating Bridge 1.424 miles in length in King County, SECOND LAKE WASHINGTON BRIDGE, UNIT 1—FLOATING STRUCTURE, a State Project, involving about 55,232 cubic yards of Concrete, 19,775 linear feet of Reinforced Concrete Railing, 7,458 linear feet of Precast Traffic Curb, 14,400 tons of Gravel, Sand and Rock Fill, 11,806,000 pounds of Steel Reinforcing Bars, 4,397,740 linear feet of Prestressing Reinforcement, 1,387,400 pounds of Structural Steel, 11,196 square feet of Steel Bridge Decking, 424 linear feet of Aluminum Bridge Railing, 174,400 pounds of Roller Tracks and Gears, 16,570 square feet of Steel Grating, 264,300 pounds of Cast Steel, 30,131 linear feet of Steel Anchor Strand, 288,100 pounds of High Strength Bolts and Cast Steel Washers, 3,500 pounds of Bronze Sliding Plates, 2,525 linear feet of Steel Pipe, 325 linear feet of Cement Asbestos Pipe, 221,800 pounds of Machinery, 38,800 pounds of Lift Columns and Counterweight Guides, 140 MBM of Treated Timber and Lumber, a lump sum bid for Mechanical Equipment, a lump sum bid for Electrical Equipment, a lump sum bid for Operator and Storage Houses and other items.

ERNEST J. KETCHAM, Chairman
W. A. BUGGE, Director of Highways

Bids: March 25, 1959.

Legal Notice

Notice is hereby given that sealed bids will be received in accordance with the law by the City of Lima, Ohio, until twelve o'clock, noon, Eastern Standard Time on the twenty-fifth day of March 1959 at the office of the Mayor in the City Building, East Market Street and Central Avenue, Lima, Ohio, and will then be publicly opened and read.

The work to be done comprises furnishing all materials and labor, tools, plant and equipment necessary for constructing, installing and completing ready for operation a raw water storage reservoir formed by earth embankments and approximately two and three-tenths (2.3) miles of thirty-six (36") inch and fifty-four (54") inch pipelines, all in accordance with the drawings and specifications prepared by Buck, Seifert and Jost, Consulting Engineers and on file in the office of the Mayor of the City of Lima, Ohio.

Copies of the drawings and specifications may be examined without charge at the office of the Director of Utilities in the City Building, Lima, Ohio. Copies thereof may be obtained at the office of the Mayor upon deposit of Twenty-five ($25.00) Dollars, which sum will be refunded upon return of the drawings and specifications in good condition within thirty (30) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be performed is divided into two (2) sections.

The principal items of work under each section are as follows:

SECTION A—Constructing the earth embankment reservoir complete with inlet, outlet, overflow and drain structures, that part of the inlet and outlet mains to be installed under the embankment, gate valve vaults and the Lost Creek diversion channels with control structure.

SECTION B—Constructing the fifty-four (54") inch inlet main, the thirty-six (36") inch outlet main and the thirty-six (36") inch transmission main with accessories and connections.

Bidders will be allowed to bid on one or both sections.

Each proposal must be on the form provided by the City, which is a part of these specifications. Bidders may submit bids for each class of work performed by a class of artisans or types of work.

Each proposal shall contain the full name of each person or company interested in the proposal and must be accompanied by a certified check on a solvent bank payable to the City of Lima, Ohio or a bid bond to the favor of the City from a reliable surety company authorized to do business in the State of Ohio and satisfactory to the City, in amount equal to ten (10%) percent of the proposal. The certified check will be forfeited or the bid bond will accrue, in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal and properly secure its performance.

The City reserves the right to consider bids for thirty (30) days after the date of opening before awarding any contract, to waive any informalities and to accept the lowest and best bid. The City reserves the right to reject any or all of the bids.

CITY OF LIMA, OHIO
By: CLYDE WELTY
Mayor

Date of Publication: February 24, 1959

U. S. Government

Department of Commerce, Bureau of Public Roads, February 17, 1959. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., MARCH 20, 1959, for Project IF3,4, Natchez Trace Parkway, Lewis County, Tennessee, Bridge over Buffalo River with a Prestressed Concrete Superstructure having ten spans of 80 feet each with a width of 32 feet, and Bridge over Chief Creek and Two County Roads having six spans of 65 feet each with a width of 32 feet, together with approaches and other work. Aggregate length 0.331 mile. The approximate quantities of the more important items aside from the Superstructures are 33,720 cu. yd. Excavation and Borrow, 2,070 cu. yd. Concrete, and 277,000 lb. Reinforcement Steel. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. A. F. Ghiglione, Regional Engineer.

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

OFFICIAL PROPOSALS

Bids: March 5, 1959

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m., Eastern Standard Time on March 5, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON SPRAIN PARKWAY, JACKSON AVENUE TO BROADHURST AVENUE, TOWNSHIPS OF GREENBURGH AND MT. PLEASANT, WESTCHESTER COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-136.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. K. G. Rauer, District Engineer, New York State Department of Public Works, Pleasant Valley Road, Poughkeepsie, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $65,350.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $3,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRON
SUPERINTENDENT OF
PUBLIC WORKS

Bids: March 19, 1959

New Jersey Turnpike Authority

CONTRACTS NOS. R-26A, R-26B, R-26C and R-26D

Proposals are invited for Contracts Nos. R-26A, R-26B, R-26-C and R-26-D which involve the construction of additional shop facilities at Central Shops, Hightstown, on the New Jersey Turnpike in Mercer County, New Jersey as follows:

Contract No. R-26A—General Construction
Contract No. R-26B—Plumbing
Contract No. R-26C—Heating & Ventilating
Contract No. R-26D—Electrical Work

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Standard Time, on the morning of March 19, 1959, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after February 19, 1959 at the office of the Authority. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

February 13, 1959

OFFICIAL PROPOSALS

Bids: March 24, 1959.

Notice to Bidders

Poughkeepsie, New York

Sealed proposals will be received by the New York State Bridge Authority at its office at Mid-Hudson Bridge Plaza, Poughkeepsie, until 2:00 P.M. Eastern Standard Time on the 24th of March, 1959, at which time and place they will be publicly opened and read for the furnishing of the labor and materials necessary for the complete cleaning and repainting of the Bear Mountain Bridge spanning the Hudson River near Peekskill, New York, and for other necessary items of bridge maintenance and repair.

Plans, specifications, proposal blanks, form of contract, bond and information for bidders may be seen at the office of the New York State Bridge Authority, Mid-Hudson Bridge Plaza, Poughkeepsie, New York; at the offices of Modjeski and Masters, Consulting Engineers, Sixth Street at Forster, Harrisburg, Pennsylvania. Copies of the same may be obtained therefrom upon a deposit of Fifteen Dollars ($15.00), which sum will be refunded if the plans and specifications are returned by bidders in good condition within thirty (30) days of the date of the award of the particular contract or the rejection of bids therefor. A refund of fifty per cent (50%) will be allowed to parties other than bidders, unless otherwise directed by the Authority.

A certified check on a National Bank, State Bank or Trust Company in the sum of ten per cent (10%) of the amount of the bid, made payable to the New York State Bridge Authority must accompany the bid, as a guarantee that the contract will be entered into, if awarded.

A faithful performance bond in the sum of fifty per cent (50%) of the contract price will be required.

A labor and material bond in the sum of one hundred per cent (100%) of the contract price will also be required.

The New York State Bridge Authority reserves the right to reject any or all bids.

JOHN S. STILLMAN
Chairman

Bids: May 26, 1959

Federation of Malaya Cameron Highlands Scheme

Tenders are invited from manufacturers for the supply of equipment for a large hydro-electric scheme which is being carried out by contract by the Central Electricity Board of the Federation of Malaya.

Three separate contracts are now advertised for each of which only complete and comprehensive offers will be considered:

(a) Supply of Valves.
(b) Supply of Sluice Gates and Single-faced Sluices.
(c) Supply of Screens and Trash-Raking Equipment.

A short precis of each contract is available on application to:

Messrs. Preece, Cardew & Rider,
8, 10 & 12 Queen Anne's Gate,
Westminster,
London, S.W.1.

Tender documents may be obtained from Messrs. Preece, Cardew & Rider after 26th February, 1959 until 24th April, 1959 after which date no documents will be issued.

Applications for tender documents must be accompanied by a cheque for £5 for each contract. Cheques are to be drawn in favour of Messrs. Preece, Cardew & Rider, and will be refunded on receipt of a bona fide Tender and return of all documents.

Sealed Tenders must be delivered to Messrs. Preece, Cardew & Rider not later than 12 noon on 26th May, 1959.

The Central Electricity Board do not bind themselves to accept the lowest or any Tender, and will not defray any expenses incurred in Tendering.

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

EMPLOYMENT OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Wanted: Concrete Paving Foreman. At least 5 years experience in highway or airport paving. Location—Ohio. P-9691, Engineering News-Record.

Sanitary And Civil Engineers with several years experience in the field of water and sewage works and industrial wastes. Excellent opportunity with growing firm. Salary commensurate with ability. Paid vacations, holidays, hospitalization. Address reply with resume to: O'Brien & Gere, Consulting Engineers, 100 East Genesee Street, Syracuse 2, New York.

Resident Engineer—thoroughly experienced —for inspection and supervision of construction of large sewage treatment plant and intercepting sewers. Location New York State. Salary open. Address reply with resume to: O'Brien & Gere, Consulting Engineers, 100 East Genesee Street, Syracuse 2, New York.

Streets Superintendent—requires 5 years experience in all-round street maintenance and cleaning operations; two years supervisory; age 30 through 50; written and oral exams given. Salary range: 492 to 600 with starting salary open. Write the Personnel Office, City Hall, City of Cedar Rapids, Iowa.

City Engineer, City of Sioux City, Iowa. Population 90,000, to head engineering department of 30 persons; report directly to City Manager. Broad civil engineering and administrative experience. Registered in some states. Minimum age 35. Beginning salary range $730-$830, depending on the qualifications. Apply City Manager, Sioux City.

Wanted: Superintendent experienced in mechanical and structural work for Ohio construction company building sewage and water treatment plants, etc. Send detailed resume of education, experience, age, date of availability, references and salary requirements to P-9978, Engineering News-Record.

City Engineer—registered engineer with qualifying experience in supervision of sewage treatment plant, storm & sanitary sewers, street and sidewalk design and building code. Salary open as to qualifications. City Clerk, City Hall, Algona, Iowa.

Camp manager—200 man construction camp —Massachusetts — long job—write fully. P-1055, Engineering News-Record.

Hydraulic Engineers—Graduate engineer with minimum of six years' experience in hydrologic investigations. Salary $561 to $724 month. Also: Engineer with several years' experience on water problems, to conduct water rights investigations. Salary $527 to $674 month. Send resume to Personnel Director, Denver Water Board, 111 West Colfax, Denver 2, Colorado.

Soils Engineer. Graduate engineer with some course study in soils engineering and at least one year of experience in charge of a Soils Section, plus other experience in soils engineering. Starting salary, $625 per month. Write Personnel Division, Oregon State Highway Department, Salem, Oregon.

Civil & Design Engineers Wanted by Illinois consulting firm. Salaries from $8000, depending upon ability. Permanent positions with paid vacation, sick leave, and profit-sharing plan. Unlimited opportunities for aggressive personnel as chief engineer in branch offices. P-1025, Engineering News-Record.

Experienced Sanitary Engineers capable of preparing designs, checking shop drawings, etc., for sewage treatment plants. Salaries, open. Send resume of qualifications to Gardner & Sterling, Consulting Engineers, Calvert and Bond Streets, Salisbury, Maryland.

Associate Traffic Engineer—To expand traffic control program. Salary range $485 to $590. Write City of Wichita, Room 107, City Building, Wichita, Kansas.

Grading Superintendent for Highway, Airport and Railroad Construction. Year-round employment, must be sober and experienced. Engineering background desired. Location, midwest. State age, education, background, experience and salary desired. P-1034, Engineering News-Record.

(Continued on opposite page)

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

MARCH 12TH ISSUE CLOSES MARCH 2ND

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

(Continued from opposite page)

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 18 year old service connects you with best openings. You pay us only nominal fee for negotiations; This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 550 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

Executive, until recently General Manager for successful New York General Contractor, solicits inquiries from Contractors requiring top man with thorough experience, qualified to assume full responsibility. Minimum $20,000. PW-9701, Engineering News-Record.

Shovel, Dragline and Crane Operator; 24 Years Exp. in all phases of Highway Construction, and other Earthmoving projects. Can repair and rebuild any make machine. Desire position as supervisor or will operate. PW-9873, Engineering News-Record.

Construction Supt.—10 yrs. experience Concrete paving, Toll and state highways PW-9875, Engineering News-Record.

Construction supervisor now in Japan desires contact to continue overseas employment. Any area. Long experience in steam generating, petroleum refining, chemical and other heavy industrial construction. Particularly capable in piping, instrumentation, electrical. Experienced overseas employment. Excellent references. PW-9880, Engineering News-Record.

Millwright Superintendent: Fast, Capable And Sober. PW-9700, Engineering News-Record.

Heavy and Highway Construction Superintendent Engineering Estimating Experience Available soon. PW-9913, Engineering News-Record.

Resident Engineer—Architect's Superintendent. Varied Industrial and some Commercial experience. Registered Civil Engineer. Desires permanent position in Mid-West area. Available in February. PW-9894, Engineering News-Record.

BSCE. Young, Single. 3½ years Civil-Sanitary Experience desires position in sanitary work. Field or Office. PW-9893, Engineering News-Record.

Construction Engineer Field Layout—Supervision city work industrial plant, subdivision development, drafting ability—S.W. or S.E. area. P. O. Box 53-296 Miami, Fla.

Structural Engineer—Extensive experience. Registered. Desire executive position or partnership. PW-9993, Engineering News-Record.

Civil Engineer, 25, BSCE, 3 yr. Diversified Experience, desires responsible position vicinity good college. Lt. Claude Pilley, 4733-C Prichard Pl., Ft. Knox, Ky. PW-9994, Engineering News-Record.

Available March. Civil Engineer—Construction Superintendent. Age 33. Supervisory experience on industrial, commercial and institutional buildings, and on paving and earthwork. Interested in management opportunity. Will relocate. PW-9997, Engineering News-Record.

Construction Executive—Age under 40. Proven record with engineer-constructor type firms. Have handled heavy industrial projects to 30 million from design thru completion. Minimum: $20,000.00. PW-9967, Engineering News-Record.

Overseas CONTRACTORS, ENGINEERS and PRINCIPALS

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A non-profit membership organization of qualified specialists in the engineering, administrative and construction crafts, who make a career of working overseas, offers its vast facilities to assist you in securing the best possible personnel to man your overseas projects. For 15 years Construction Men's Association has supplied 90% of American contractors working outside the United States with experienced construction men.

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WAlker 5-1220-1

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60 Market Street
San Francisco 11, California
YUkon 6-5308

• POSITIONS WANTED

Registered P. E. Texas & Tennessee. BSCE, 1949. Age 35. U. S. Citizen. Presently self-employed, Southwest. Former positions as Project Engr., Chief Structural Engr., Senior Structural Engr. Thoroughly experienced in all phases of structural work including highly indeterminate structures such as: multi-story structures, office bldgs., hotels, hospitals, banks, auditoriums, stadiums, schools, warehouses, process plants, expressway bridges, aircraft hangars, etc. Desire position in Southeast or Southwest with advancement possibilities. Top References. Salary consistent with nature and scope of position proffered. PW-9971, Eng. News-Record.

Plant Manager—Fifteen years experience. 1,000,000 square feet, $300,000.00 Budget. 10 years additional as City Engineer. PW-9995, Engineering News-Record.

Construction Administrator, negotiator, manager heavy construction. Thirty-five years in the business. PW-9976, Engineering News-Record.

Architectural Structural Engineer, long experience design intricate heavy structures, waterfront installations, highways, qualified to assume full responsibility. Top references. P. E. Preferred location: New England, New York. PW-9959, Engineering News-Record.

General Superintendent wants position in Ohio, New Jersey, Pa., Maryland, Delaware or New York. At the present time is General Superintendent in the Midwest as superintendent of paving, bridges and grading. Has been Superintendent of Roads, Dams, and Air Bases. Will be available on March 15, 1959. PW-1003, Engineering News-Record.

• POSITIONS WANTED

Structural Design Engineer—25 years experience all phases on public utility, industrial and housing work. Registered N.Y., Penna. and Illinois. Desires position as designer or squad leader in permanent organization. East coast preferred. PW-1004, Engineering News-Record.

Construction Executive and General Superintendent, 25 years experience in commercial, industrial, public buildings, and mass housing, experience includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Desire permanent relocation eastern U. S. PW-1006, Engineering News-Record.

Construction Executive, thoroughly familiar all phases construction, i.e. estimating, supervision, business solicitation. Experience covers wide range diversified projects. PW-1021, Engineering News-Record.

Structural eng. M.S. 8 years experience in design, espec. prestressed and precast concrete, heavy, light, industrial field, modern structures. European background. PW-1019, Engineering News-Record.

Field Office Engineer—Estimator, 26, BSCE, heavy construction experience. Desires position with gen'l contractor. N. Y. area. PW-1031, Engineering News-Record.

Design Engineer, 15 yrs. exp., Plant Engineering, Process Piping, Equipment Layout, Design, Drafting, Supervision. Will relocate. PW-1050, Engineering News-Record.

Civil Engineer, 28, BSCE, 7 years experience in estimating, construction supervision, surveying and design. Desires permanent position. PW-1051, Engineering News-Record.

U. S. ARMY ENGINEER DISTRICT—OMAHA

Offers Opportunities in Several Locations Within States of Iowa, Nebraska, North Dakota, South Dakota, Colorado and Wyoming

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Civil Engineers
Electrical Engineers
Construction Engineers
Structural Engineers
Mechanical Engineers

Salaries Range from $6285 to $8810 per year

plus

Attractive Retirement System
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Interested applicants should submit applications (Standard Form 57, Application for Federal Employment obtainable at any first or second class post office) to the U. S. Army Engineer District, 1709 Jackson Street, Omaha, Nebraska.

These positions are in the competitive civil service. Appointments will be made under civil service procedures.

MECHANICAL ENGINEER

Major Foreign Operating Oil Company offers career opportunity for graduate mechanical engineer. Initial assignment in our New York Office.

To conduct equipment evaluation, technical service on mechanical equipment used in oil refineries and cross country pipelines, pressure vessel designing, etc.

Salary commensurate with experience. Write outlining personal history and work experience—please include telephone number to:

P-9743, Engineering News-Record Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ENGINEERS

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PREFER GRADUATE REGISTERED ENGINEERS WHO SEEK LONG RANGE EMPLOYMENT WITH AMPLE OPPORTUNITY FOR PROFESSIONAL DEVELOPMENT AND ADVANCEMENT IN A STEADILY EXPANDING AND GROWING ORGANIZATION.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income and other benefits. Blue Cross & Blue Shield Available. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

SVERDRUP & PARCEL ENGINEERING CO.
ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

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APPLICATIONS FROM
ENGINEERING PERSONNEL

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Career opportunities for individuals interested in professional recognition, ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume to Personnel Department

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
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Northside Station, Box 9997
Jackson 6, Mississippi

HIGHWAY DESIGN ENGINEERS

Opportunities in positions of responsibility for experienced highway design engineers.

Interviews arranged for qualified applicants only.

Forward detailed resume of experience, education and salary requirements to:

BUCHART ENGINEERING CORP.
Consulting Engineers
55 S. Richland Ave. York, Penna.

Construction Engineer to supervise contracts and **Resident Engineers.** Must be experienced in sewer, water and plant work; registered or eligible for registration in Ohio.

Designers and **Draftsmen** experienced in sewer and water layout and treatment plants.

By firm of Consulting Engineers in Ohio.

P-9814 Engineering News-Record 520 N. Michigan Ave., Chicago 11, Ill.

WANTED
HIGHWAY DESIGNERS ALSO
PROJECT DESIGN ENGINEER
To Assume Responsiblity for Complete Highway Projects
MACCABEE CAMPBELL & ASSOC.
173 W Madison St. Chicago 2

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

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2—Jaeger 600' Rotary Compressors, diesel used 1200 hours—Portable on Rubber—New Guarantee ..... $10,500 Each

10—Jaeger 125' Rotary Compressors, Gas Like New Guaranteed ..... $3,250 Each

3—NEW Imerial Electric Motors 220/440, 3 phase 60 cycle, open drip proof, 1800 rpm with standard long shaft, frame #E326 with motor bases including 95B6H2505 C-H starters and heater coils. $200 Complete. Cash Only

All of the above equipment owned by us, in our yard for inspection. Delivery as is, where is, Corona, N. Y.

J. C. LEMBO MACHINE CORP.
Northern Blvd. and 127th St. Corona 68, N. Y.
NEwtown 9-7777

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RENT • REPAIRING

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Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 92

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Manufacturers of Transits and Levels
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ALL MAKES

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- C. L. Berger & Sons
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- Eagle Instrument Co.
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PROMPT REPAIR SERVICE
FIFTY YEARS EXPERIENCE
All types Transits and Levels

INSTRUMENT SALES CO.
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Established 1914.
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3 Eimco 105 Tractor Excavators

1 Eimco 105 Front End Loader

7 Model D Tournapulls w/rear dump units

2 T-D 9 Front End Loaders

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FRAZIER-DAVIS CONSTRUCTION CO.
1319 Macklind Ave. St. Louis 10, Missouri
STerling 1-1950

ROCK DRILLS

3 only Model TWM3 Joy 5" Rock Drills complete with Towers, Dust Collectors, (Powered by separate motors) all mounted on D8 Tractors. $12,500.00 each.

CAMPBELL-BENNETT LTD.,
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Phone—Cherry 3144

FOR SALE

3—Caterpillar DW-15's

Tractor & Scrapers

s/n 45C348, 45C-369, 45C-379

Excellent operating condition, 21.00 x 25 Rubber—Excellent to Good

EUCLID SALES & SERVICE, Inc.
5231 Manchester Ave., St. Louis, Missouri
Phone—Mission 5-3417

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ACKER-DENISON CORE BARREL —PROVED AND IMPROVED

While the basic features of the original Denison are duplicated in the samplers manufactured by Acker, numerous improvements suggested by Acker's 40 years of soil sampling experience are incorporated in the new Acker-Denison. It is these improvements that make the Acker-Denison even more useful and efficient than before!

Remember, no other manufacturer can offer the improved performance and exclusive patented features of Acker's new Denison Core Barrel. This proud achievement of Acker development and progress is exclusively Acker!

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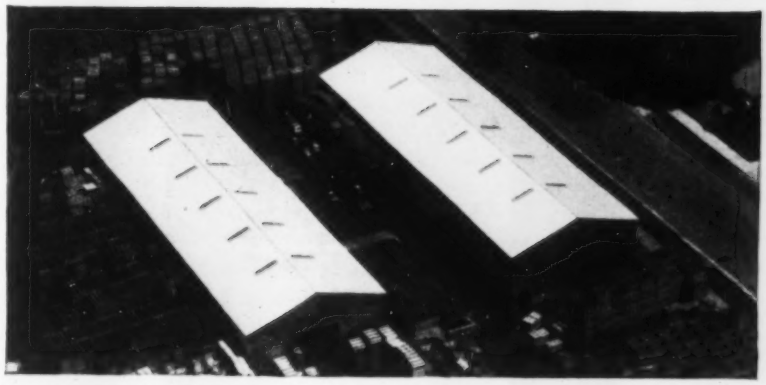

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Both pictured general warehouses of the Motor Wheel Corporation have aluminum siding and roofing, skylights and asphalt floors.

Motor Wheel Corporation estimates these pole buildings were erected for half the cost of conventionally-built structures originally considered.

Regardless of the savings factor, Koppers pole buildings offer as many and more advantages than conventional structures. Pole Buildings are strong, sturdy, wind and weather resistant, and *permanent*, too! All poles and lumber in or near the ground are pressure-treated for protection against termites and decay. In addition, pole buildings go up quickly and easily; in weeks, not months.

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Make Yourself Heard

CONGRESSIONAL HEARINGS have started, and others will start, on many pieces of federal legislation of concern to the construction industry. These hearings should have the advantage of information and opinions from interested and informed persons.

So, make yourself heard by your legislators—either through your associations or directly. Write your Congressman—it's a civic responsibility. Your knowledge or views might properly shape the laws of our land, especially those laws that are of prime concern to the industry you serve—construction.

Give Sewerage Aid a Chance

THE ANNUAL EXPENDITURE for construction of sewage treatment plants has gone from a five-year average of $222 million to $351 million in 1957 and $400 million in 1958. Other Public Health Service figures indicate that this near-doubling of sewage plant construction in two years is due to the stimulation of federal grants appropriated in the past 2½ years (ENR Feb. 12, p. 24). Yet the grants are apt to be cut—first down, then out—if an Administration request is heeded.

The $113.7 million in federal construction grants made to communities so far looks like money well spent. Certainly the program has been well administered; it has been handled largely at the local level, the states certifying as to their communities' eligibility to receive grants-in-aid. Financial need and pollution conditions have been the basic criteria for establishing eligibility. Public Law 660, the water pollution control act that established the 10-year, $500-million construction grants program, has lived up to expectations.

But so much more remains to be done. PHS estimates it would take a $575-million expenditure in each of the next eight years to build all the needed sewage plants in the backlog while also keeping pace with new needs of new population increments. The 1958 contract volume of $400 million is still a far cry from this $575 million said to be needed.

It would be unwise to cut the federal grants at this time, for they surely seem to be stimulating needed construction. They may not be stimulating enough to meet the needed annual expenditure as yet, but it can be hoped that the upward trend of 1957 and 1958 will continue.

The proposed alternate to federal grants is giving the states the responsibility for stimulating sewage works construction and giving them certain federal telephone revenues for the purpose. This proposal is idealistic; but it has several impracticalities. Principally, it is improbable that all state legislatures, given phone tax revenues, would or could earmark them for sewage works.

Rather than cutting off the federal dollars, stimulating still more local spending should be the real concern. The $50-million annual authorization should be appropriated each year with hope that the next few years will see the total annual expenditure nearer what it needs to be to do the desirable pollution abatement job.

Highway Engineering Probe

COMPARATIVE ENGINEERING COSTS—state highway agency vs. consultant—should be a prime concern of the legislative investigation now started in New York State (ENR Feb. 12, p. 17). Here is an opportunity to shed some light on the economics of highway engineering. It would be too bad to see the investigators spend all their energies on side issues.

With most states building up their engineering forces and cutting down on use of highway consultants, New York counters the trend. Its Department of Public Works has over 80% of its present highway program in consultants' hands; it has bought $66 million worth of private engineering services in the past four years.

It is hoped some revelation of DPW accounting might make possible a fair comparison of the costs of surveys, design and construction supervision done by the agency's own personnel as opposed to private firms.

Other good could come of this investigation. The specter of competitive bidding for professional services has already been raised as a side issue, and it can be expected that the legislature's investigators will be impressed forcefully with the fact that engineers frown on the practice. Secondly, discussions in Albany have already served to emphasize that the public works agency has engaged consultants partly because of its widely fluctuating highway construction program. This program has peaks and valleys as the annual appropriations for road surveys, design and construction vary. And the appropriations vary because—for one big reason—New York is among those states putting gasoline and other highway-user taxes into the general fund rather than earmarking a sizable and predictable sum each year for highways. A more dependable flow of state highway funds could help smooth out the highway engineering load and might even cut its cost.

The resolution calling for the investigation asks the investigators, members of the legislature, to recommend amendments to the law to provide safeguards against misuse of public funds. It is hoped these investigators won't bog down in questions of why Firm A has done so much work for the state while Firm B has done so little, or whether the DPW's contracting officer should have a board or commission making his decisions for him as to whether, when and why engage an engineering consultant.

It is hoped they'll stick to the basic question—the relative economics of highway engineering as done by state forces and by private firms.

How Bob's downfall proved a windfall

1.

Bob Taylor won the contract—'twas a much combated prize—
To dig an underground garage of vast, majestic size.
"Let's excavate to China," Taylor cried, "let's see 'em roll!"
"Yes, *sir!*" replied a foreman, then fell plunk into a hole.

2.

Poor Bob was glum as people come. A Travelers man heard all.
"Hereafter," he suggested, "let The Travelers take the fall,
For under Workmen's Comp and Public Liability,
When workmen or some passer-by gets hurt, we pay the fee.

3.

"But best of all, our safety engineers survey each site,
To find those hidden hazards and to help to set them right.
Statistics all confirm the fact that Travelers safety service
Reduces costs and accidents, saves you from being nervous."

4.

"Exactly what I need," cried Bob, "you don't have to cajole."
The excavation's going great, Bob won't be in the hole!
If *you're* about to build a road, a tunnel, bank or hall—
Secure the plan! Just give a trusty Travelers man a call.

NOTE: *Bonds, Equipment Floaters, Builders' Risk Insurance, too. Are other ways The Travelers helps a contractor like you.*

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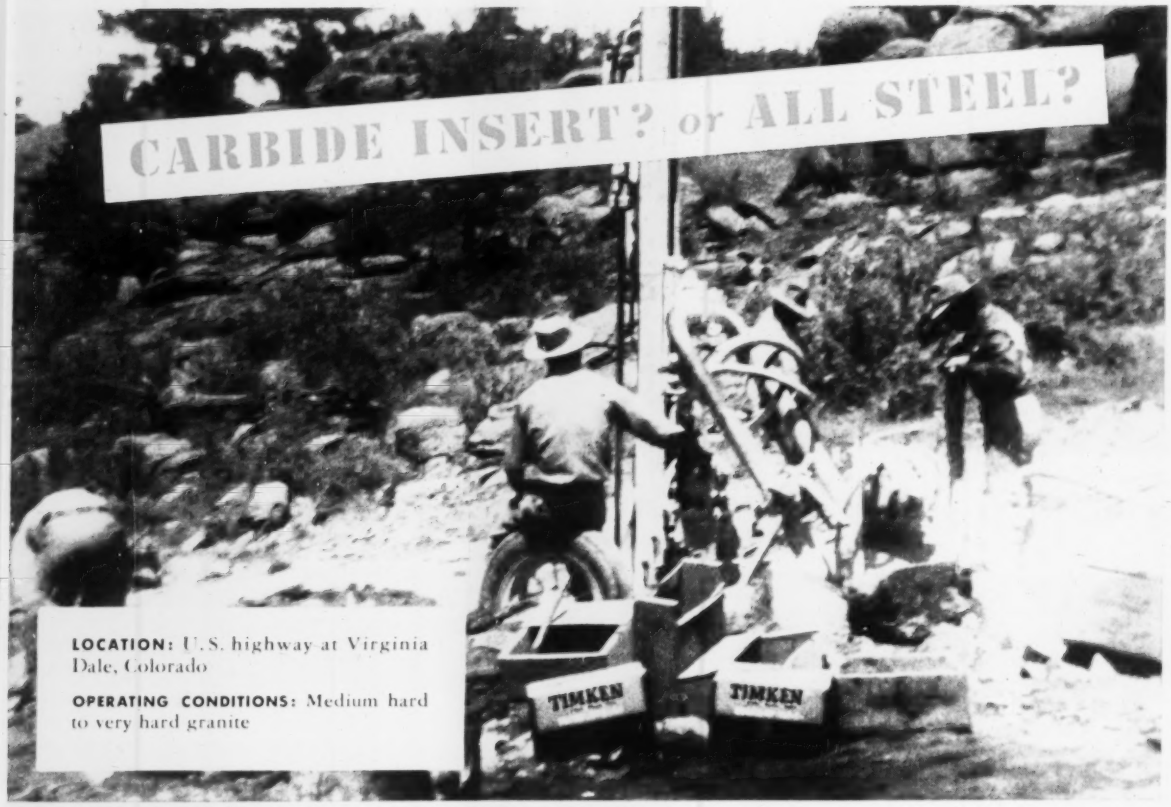
CARBIDE INSERT? or ALL STEEL?
LOCATION: U.S. highway at Virginia Dale, Colorado
OPERATING CONDITIONS: Medium hard to very hard granite
TIMKEN
TIMKEN

"We switch our TIMKEN® bits and drill up to 10 inches per minute in granite"

. . . Reports Northwestern Engineering Co.

GRANITE in varying hardness — that was the problem facing Northwestern Engineering Co., of Denver, in drilling the blast holes for relocation of the U.S. highway at Virginia Dale, Colorado. They solved the problem by using Timken® all steel multi-use bits in the *medium-hard* granite — then switching to Timken carbide insert bits for the *very hard* granite. And they averaged 6 to 10 inches per minute!

Switching your Timken bits like this can prove economical for you, too. Timken carbide insert bits are your best bit for drilling in hard, abrasive ground. But in softer ground use Timken all steel multi-use bits. Both bits are interchangeable in the same thread series. Without changing drill steels, you can change bits quickly and easily as the ground changes.

All Timken rock bits are made from world-famous Timken fine alloy steel. And for even longer life, Timken bits have a specially developed shoulder union that protects threads against drilling impacts.

Get all these advantages by using bits made by the world's largest manufacturer of removable rock bits. Timken bits! For help in selecting just the right bit, call or write: Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". Makers of tapered roller bearings, fine-alloy steels and removable rock bits.

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Timken threaded carbide insert rock bit

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